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Ernst Lubitsch

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Here are the Members Gathered at Toronto,

THE S. M. P. E. CONVENTION

As Observed by Hal Hall, Editor of The American Cinematographer

COVERING a convention of the Society of Motion Picture Engineers is not a one-man job. It took this writer just about one day to discover that. So, henceforth, and forever more, I shall never censure any writer who covers an S. M. P. E. convention for me if he happens to slip up on something of importance.

Truly, one would have to search far and near to find any group of men with such a mass of scientific brain power as one found at the convention in Toronto last month. I came away from the convention feeling as though my small brain simply never could hold all the matter it had tried to assimilate while there for four days.

It was a mavelous meeting, one which the officials of the society should be proud of. Toronto is a wonderful city and an ideal spot for conventions, and its Mayor, Samuel McBride, is to be congratulated not only on his city but for his own splendid spirit and hospitality.

Getting down to the convention details, wide film seemed to be one of the outstanding matters of real interest. The consensus of opinion seemed to be that there will be a change in the present width of film, and as for the future width, that is a problem. The society naturally voiced the opinion that a standard size should be adopted when the change is made, but no hint of any standard width was given.

Sound ran wide film a close second in discussion, and some interesting papers were read on various angles of this new picture development that has so changed the picture business.

An outstanding feature of the convention was the decision on the part of the Society to publish its own journal. This will be started in January, and will be known as the Journal of the Society of Motion Picture Engineers.

From here on I shall try to give the report of the meeting in chronological order.

Arriving at the Royal York hotel early Monday morning, October 7, I knew at once I was going to like this convention, for I ran right into Herford Tynes Cowling, head of the Eastman Teaching Films, and a member of the A. S. C. Meeting Cowling was like being wafted into a land of eternal Spring after a year in the Arctics. He radiates hospitality and within a half hour he had introduced this editor to so many celebrities that I was afraid to meet them for fear I would forget some name.

Where Cowling left off Joe Dubray, another A. S. C. member, there representing Bell & Howell, took it up, and by noon my hand felt like President Hoover's must feel after a morning of reception.

It seemed as though all the technical brains of the industry were on hand. J. I. Crabtree, C. E. Ives, O. Sandvik, Doctor Hickman, H. A. Hartt, L. A. Jones, Cowling, Ted Curtis, George Blair of the Eastman Kodak Company, and Dick Grady too, up from New York along with Charlie Bonn, of the J. E. Brulatour company. And what a great bunch!

Then there were those two National Lamp Works geniuses, R. E. Farnham and Carl Egeler, and genial President L. C. Porter. Dashing madly hither and yon, trying to do six men's work, was P. A. McGuire of the International Projector Corporation, handling the publicity for the convention. Then there were Peter Mole of the Mole-Richardson firm from Hollywood, and Frank Graves also from Hollywood, together with H. C. Silent. In rapid succession came Dr. William Rayton of Bausch and Lomb, Joe Coffman of the Audio-Cinema, W. C. Kunzman, who did a splendid job in his handling of the program arrangements, William C. Hubbard of the Cooper-Hewitt company, smiling always; W. H. Carson of the Agfa company; D. G. Blattner from the Bell Telephone Laboratories; Terry Ramsaye, Jimmie Cameron, whose book, "Motion Pictures with Sound" has, I understand, now gone into the 20,000 class in the matter of sales; William Bristol, there with a new home talkie device and Burton DePue of the Burton Holmes Laboratory and so many others that I simply cannot remember them all.

After Mayor McBride had welcomed the society to Toronto, Kunzman, Burnay, Hubbard and Crabtree gave the reports of the Program Committee, Secretary, Treasurer and Progress Committee, and Harry W. Jones gave the first paper on "The Modern News Reel," which gave an idea of what is being done in the way of making the sound better in this class of picture.

Then Dr. Hickman of the Eastman company threw a bombshell into the convention when he presented a paper on "The Present Policy of the Society of Motion Picture Engineers." It was a plea for a change in the policy of selecting officers, and created spirited discussion for nearly an hour; ending with everybody happy after expressing themselves, in some cases very emphatically.

In the afternoon S. K. Wolfe of the Electrical Research Products, gave an interesting talk on "Theatre Acoustics," in which

Canada, for the S. M. P. E. Fall Meeting

he emphasized the importance to the sound picture of proper theatre acoustics. Professor A. C. Hardy, of the Massachusetts Institute of Technology, gave a paper on "The Optics of Motion Picture Projection" which was highly technical and interesting. Rudolph Miehling's paper on "Sound Projection Yesterday, Today and Tomorrow," was an interesting talk on what has happened and will happen in the projection of sound pictures. W. H. Carson of the Agfa Ansco company followed with a discussion on "The Film Perforation and Means for its Measurement." This was followed by a paper on "Surface Treatment of Sound Film," prepared by Crabtree, Ives and Sandvik, of the Eastman company, an extract of which appears in this issue of the CINEMATOGRAPHER. "A New Method of Blocking out Splices for Sound Film," by Crabtree and Ives, followed next. An extract of this also appears elsewhere in this issue.

D. G. Blattner, of the Bell Telephone Laboratories, next gave a paper on "Characteristics of Loud Speakers for Theatre Use." At the evening session Terry Ramsaye of the Pathe Exchange, gave a paper on "The Human Equation in Sound Picture Production." This was followed by a paper on "The Sound Film Situation in Europe," by N. D. Golden, which revealed that sound abroad is so far behind us that one cannot even say it is in its infancy over there. Leon Monosson of the Amkino Corporation gave an enlightening paper on "Cinematography in Russia," and pointed out that the Russians are seriously at work and are developing much of their own in technic and equipment.

Tuesday morning Carl Gregory gave an extremely interesting paper on "The Early History of Wide Film," pointing out that wide film appeared away back in the Nineties. "Rectangle Proportions in Pictorial Composition" was next discussed by Dr. L. A. Jones of the Eastman Company. "Optical Problems of the Wide Film" came next by Dr. Rayton, of Bausch and Lomb. He pointed out the teriffic problems that the optical people face with the wide film demanding new lenses for cameras and projectors. Joe Dubray next read a paper on "Some Practical Aspects and Recommendations on Wide Film Standards" prepared by him and A. S. Howell of the Bell & Howell company. This paper created much discussion and was one of the outstanding papers of the convention. A complete extract appears elsewhere in this issue. It faced the problems coming with much useful advice.

C. A. Tuthill, of Paramount, then discussed "Wide Film from the Recording Standpoint." explaining how wide film will help sound. Joe Dubray then read a paper explaining the details of the new Filmo 16 millimeter camera which has a governor in it that makes possible many things never done before with amateur cameras. This was followed by William Bristol and a paper and demonstration of a home talking device which made a big hit. A detailed account of this appears elsewhere in this issue. Papers on "Photographic Characteristics of Sound Recording Film," by Jones and Sandvik of the Eastman Company, "Film Numbering Device for Cameras and Recorders" by M. W. Palmer of Paramount and "Dimensional Analysis as an Aide to Miniature Cinematograph," followed next. Dr. P. E. Truesdale then gave a paper, illustrated, on "Sound Films for Surgical Instruction" which proved that the cinema can be a splendid aid in teaching surgery.

Papers on developers and fixing baths by Dundon, Ballard, Crabtree and Hartt of the Eastman Company followed. There was no session in the evening.

Wednesday morning started with a paper by William Offenhauser, of R. C. A. Photophone, on "Some Fundamental Principles of Sound Recording and Reproducing." This was followed by a paper on Studio Acoustics and Microphone Placement," by J. P. Maxfield and H. C. Silent, of the Electrical Research Products, Inc. This paper brought out the advisability of using but one microphone in the studio. It also pointed out that no longer can a studio use wall-board painted to look like brick, because the acoustic properties are such that the sound will not ring true. A similar paper was next read by E. W. Kellog of the General Electric Company on "Some Aspects of Reverberation." Joe W. Coffman of the Audio-Cinema, next read a paper on "Artistic Considerations in Sound Film Production" which was enlightening and interesting as he advised that the artistic be not forgotten in the rush for sound.

"The Illusion of Sound and Picture," by John L. Cass, of R. C. A. Photophone, was next.

Thursday found the meeting in high for there were many papers yet to be read. These included "Water Cooling of Incandescent Lamps," by Dr. N. Gordon, of the General Electric; Operating Characteristics of High Intensity Arcs," by A. C. Downes and D. B. Joy of the National Carbon Company; "A Studio Photometer," by J. L. McCoy, of Westinghouse; "Flexible Drive Shafts—Their Application to Sound Pictures," by J. C. Smack, of S. S. White Dental Co.; "The Microphone Boom and Its Use," by Lew Kold, M-G-M; "A Year of Sound," by Harold B. Franklin; "Compensator for Movietone Production," by Gerald F. Rachett; "Camera Mechanisms," by A. S. Newman; "The Academy of Motion Picture Arts and Sciences," by Frank Wood; and "Camera and Projector Aperture in Relation to Sound Pictures," by Lester Cowan of the Academy. This last paper explained the new aperture standards worked out by the committee made up of members of the American Society of Cinematographers, The American Projectionist Society and the Academy. A complete excerpt of this paper appears elsewhere in this issue.

Announcement of the election of new officers, telling of the election of J. I. Crabtree, of the Eastman Kodak Company, as President, made it a complete and pleasant meeting, for Mr. Crabtree is not only a man of great mental ability, but is universally admired for his sterling character.

THE ARTISTIC POSSIBILITIES OF ACOUSTICAL CONTROL

A Common Sense and Understandable Discussion of a Vital Problem in Sound

By J. P. MAXFIELD
Electrical Research Products, Inc.

THERE is no halo about the matter of recording. It is more or less a common sense use of equipment which has been furnished. It looks more like a common sense proposition after we found out something—after we found the line to direct that common sense, than before we found that line, because other things looked to be equally common sense. The matter of holding out is due to the fact that then we didn't pick the right track on which to work out common sense.

I am stating the points I want to make with a consideration of how we observe. In taking a motion picture we are taking a scene which supposedly is something that might have happened in real life. Each individual in the audience is an observer who might have been in that scene watching it. There are two things about the talking picture that differ very markedly from the condition under which a real live normal person would observe the scene. In the first place, the camera has only one eye and people have two eyes which enables them to get a sense of depth, *i.e.*, a third dimension. The camera takes a one-eyed picture only and the art of photography has developed with the use of lighting and proper focal length of lens, and other methods you are more familiar with than I am, to indicate on the screen, a certain amount of depth.

We have a similar situation in sound. We have two ears and can determine direction and to a certain extent, depth. But the microphone is unfortunately a one-eared device and you don't get quite the same effect you would get with two ears. So we have had to make certain modifications in sound recording to take into account the fact that we are recording with one ear instead of two. There is one other point that comes up quite markedly in the talking picture that never comes up in connection with recording phonograph records, or the mere making of the records. In phonograph recording, the record is the final finished product, and if it is successful, it is an artistic product. You cannot see the artist that made the sound. There is a certain faking found to be necessary to accentuate the points of attention because you cannot see the artist. The balance of the record is not the same as you would have had if you had gone to see the artist in a theatre or auditorium.

When you come to a picture with the talking or sound track, that is no longer true. The picture, as you probably know from seeing the talking scenes run silent, is very incomplete. If you have a sound record which co-ordinates with that picture, it looks entirely different. The purpose of the sound record is to fill in the other part of the picture and round out and give an artistic effect to it.

One of the first difficulties encountered was making the voice follow the artist around the screen. Your two ears enable you to tell the general direction, but one ear completely destroys this sense. We did find that we could make the voice follow the artist in and out of the set. When a person walks back into a set, we make his voice appear to recede also, and when he comes forward, his voice can be made to appear to come forward with him. Fortunately when we controlled the acoustics we found we had done other things at the same time. For a purely psychological reason, the voice appeared to follow the artist from one side to the other, if the acoustic conditions are correct, to make if follow a speaker in and out of the set. This is probably due to the fact that when the acoustic conditions of the set are correct, the sound which is reproduced by the horn has mixed with it some of the reverberations which took place in the set. Under these conditions it is difficult to locate accurately the position of the horn behind the screen. The voice then comes from somewhere in front of the house and if you see a person on one side or the other of the screen, this makes a voice, to a good many people at least, appear to follow the speaker sidewise.

For the sake of simplicity, I am going to draw an analogy between the depth effect obtained acoustically with the microphone, and the effect of depth obtained by means of focal length of the lens where the picture is concerned. There is, however, a marked difference between the camera and the sound equipment. The focal length of the camera depends on what is built into the camera and lens, and on nothing else; whereas the "focal length" of the microphone depends upon the acoustic qualities of the set, and not upon the construction of the microphone itself. It should be remembered that the term "focal length" is applied to a microphone, so to speak, by courtesy, as the microphone itself has no physical property equivalent to the focal length of a photographic lens.

The apparent depth you hear as a speaker recedes from the camera depends almost wholly on the acoustical qualities of the set in which the action is taking place, and on the microphone position. The property by which we hear depth with one ear depends upon our ability to distinguish between the loudness of the direct sound coming from the speaker's lips as compared with the echo or reverberation that is actually in the room. Try this experiment in an empty room, having somebody speak to you from distances ranging from three to fifteen feet, while you have stopped up one ear completely. As they go away you hear an increase in the amount of reverberation. It is this change in the apparent reverberation which enables us to interpret the distance of the speaker from the camera.

There is one other thing to be mentioned here. With one ear you can no longer pay attention to a sound from a given direction to the exclusion of sounds coming from other directions. If you are carrying on a conversation with a person using both ears, you pay attention to the speaker and not to the outside noises and the incidental noises of the room. As soon as you stop up one ear you cannot do this and the noises appear to be louder and more disturbing.

Therefore, it is necessary to have less reverberation in a set than in a normal room in which you are living and using both ears. I think it was this factor of the necessary deader condition that led to the early dead sets. If the right amount of reverberation or echo is brought into the set, you immediately get one or two other effects besides this one of depth. You find that it makes very little difference whether the speaker speaks four, five, or six feet away from the microphone or eighteen or twenty feet away insofar as your ability to understand is concerned. The quality changes as it should when the person goes away. When a speaker turns his back to the microphone and speaks we get the same effect—the same change in the quality of the voice you would expect when a person turns his back to you and speaks. It is necessary, if you are going to use these changes of quality, that the speaker should turn back to the microphone if he turns back to the camera. It is necessary, therefore, that the microphone should be in the same general direction from the actors as is the camera. Otherwise, you might get the weird effect of the speaker coming to you and the voice going away from you. It is also necessary that for close-ups the microphone be located nearer to the speaker than for long shots, since a close-up is the equivalent to bringing the speaker in the near foreground.

This last requirement was not sufficiently well realized when we first started to use this new acoustic method. A very interesting result was obtained where the long-shot sound track was matched up with a close-up picture of action in the back of a set. The set was about twenty feet deep. The result was that the

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CONCERNING CINEMATOGRAPHY

A Few Words From Ernst Lubitsch on Cinematic Conditions, as Told to William Stull, A. S. C.

THE cinematographers of Hollywood have had some colossal obstacles placed in their way since we began to make talking pictures, but they have surmounted them wonderfully. I think that the quality of photography they are getting now has come back almost to the high level of the old days—almost, but not entirely! There are still a few things to be overcome before we get gack that absolute perfection again; but these last few months have seen great progress.

Lubitsch and Victor Milner, His Chief Cinematographer

Probably the greatest evil has been the policy of using a number of cameras on every scene, and trying to do long-shots, close-ups, and everything else all at once. The booths have been inconvenient, but in the hands of such a skillful cinematographer as Victor Milner, A. S. C., who photographed my last picture, *The Love Parade*, they are no more than inconvenient. But the real handicap has been this business of having to use so many cameras. On silent pictures, we only used to use one camera—and that kept the cameraman busy; now, on the talkers, we have to use three or four cameras always, and sometimes more. It is entirely the wrong system; unjust to the cinematographer, to the actor, and to the director. They tell us that by using so many cameras we are saving the company time and money; well, if we are, those of us who have been making silent pictures the other way these last twenty years ought to be in jail! Just think of all the money we must have wasted by concentrating on one angle of a scene at a time—and making it good!

Just the same, this change in the camerawork of the talking films has done one good thing. It has freed the First Cinematographer from the mechanical routine of running his camera. That is good. Anyone can run a camera, but it takes a real artist to arrange the lighting so as to bring out the full beauty of the set and actors, and match the emotional key of the scene. That is a very great job in itself, and to have the first cameraman free to do this without the routine bother of cranking a camera is a very great help to a director. For myself, I do not believe in this present craze for covering a set with directors of dialogue, directors of dancing, directors of music, and all the other would-be directors who are interfering with the Director's work. I would not make a picture that way, for it could not be a satisfactory picture with so many minds trying to govern it. But to have my First Cameraman free to direct the photography is another matter. It is really what he has always been doing, and anything that gives him a chance to do his work better is just making things so much better for me. It is better too, for the company, for he can do his part better and quicker, and on the rare occasions when we have to work overtime, he can still remain to direct the photography, so that it, like the dramatic part of the picture, would be the product of a single mind's supervision. That is how things should be done in every department. That is the way it is often done in Europe. There, for instance, the director is more active in preparing and editing his pictures than is usual here; and, again, the art-director is responsible for everything about the set: one man designs it, supervises its construction, paints it, and dresses it. Our art-directors there are a much more intimate part of the production than they are here—they stay right with the picture from start to finish, even being on the set with us while we are shooting, ready to make any repairs or alterations that may be needed. Over here, there is a separate man for all of these duties—a seperate mind to interpret the original design in its own way. Only once over here have I been able to have my art director work through the picture with me as we did in Europe: that was in *Lady Windermere's Fan*, a picture which I think had the most perfect sets of any I have made; and most of the critics were kind enough to agree with me on that point. So now, of course I believe in these changes which are giving the First Cameramen a freer hand in their work.

A striking shot of Lubitsch at work

In Europe they are learning to coöperate more and more with the cinematographers. Just recently I saw a picture made by an American cameraman who has moved to Europe. Here, he was considered good, but only good, and he probably never got a real chance to do his best work; this German picture of his was much more than good, for he had been given a free hand, and the result was such great cinematography as any director would be proud to have in his pictures. But then, he had so much more to work with than we did there in Germany before I came over here. Why, I remember when we made *Gypsy Blood*, back in 1919, we had almost no facilities whatever: I don't think we had more than eight lights for the whole picture! All that has changed, but one thing is the same as ever: the American cameramen are the best in the world. How we used to envy them in the old days! They knew one thing that we would have given anything to know: they could photograph their people so that the makeup didn't show! They made pictures of *human beings* rather than *actors*. They were wonderful to us then, and they still are, for they are just as far in the lead as ever.

Perhaps the greatest point about American camerawork is that it is truly artistic. It is beautiful, it is distinctive, but it doesn't call attention to itself. That is greatness in art, that it is great yet not obviously great. For when art begins to be apparent, to show itself as a definite, studied effort to be artistic, it ceases to be art, for true art needs no label. To me, that explains the greatness of American cinematography. Also, it is the key to my objection to M. Dreyer's *Passion of Joan of Arc*. That picture had brilliant moments, but it was so studied, so obviously calculated to make people gasp, and to say, "See, that is art," that it overreached itself.

Color photography? Of course it is bound to come. Right now,

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The Surface Treatment of Sound Film

By J. I. CRABTREE, OTTO SANDVIK, *and* C. C. IVES

(An Abstract from paper read at Fall Meeting of the S. M. P. E.)

SOUND record prints may be satisfactorily lubricated by applying a thin coating of a solution of paraffin wax in carbon tetrachloride along the edges of the film in the perforation area and drying. This treatment is superior to the application of solid or molten wax inasmuch as the wax does not flake off or encroach on the sound track during rewinding or projection which would produce ground noise.

The application of the wax is accomplished by means of two steel disks which dip into the wax solution. The quantity of wax applied is varied by changing the rate of rotation of the disks in relation to the speed of the film. After application the solvent is quickly evaporated by passing the film through a short narrow tube through which a current of air at 120 degrees F. is blown.

An alternative method of lubrication is to apply a 1.0% solution of light motor oil in carbon tetrachloride to the entire film surface and then buff in a manner as described previously.

In addition to providing satisfactory lubrication, it is desirable to treat sound record prints in such a manner that the film will have a minimum tendency to accumulate scratches, dirt, and finger marks during handling which in turn cause ground noise. Several suitable methods of treatment have been evolved, the most satisfactory of which consists in applying a 1% solution of cantol wax to the entire emulsion surface of the film, buffing, and edge waxing as described above. The cantol wax provides a hard smooth surface which in itself has poor lubricating properties, but the edge waxing supplies the necessary lubrication. A film treated in this manner eventually becomes scratched but the scratches are usually confined to the wax coating and do not reach down to the silver image so that by removing the wax coating at intervals by cleaning with carbon tetrachloride and re-waxing, the image is maintained clean and free from scratches.

Three machines are necessary for the above treatment, namely (a) the waxing and buffing machine, (b) the edge waxing machine, and (c) the cleaning machine. Machine (b) can be attached to the end of machine (a) but it would be inefficient to attach machine (c) to machine (a) plus (b) because the former can be run at a speed of 200 feet per minute while it would not be desirable to run machine (a) at a speed greater than 30 feet per minute unless more buffing wheels are attached.

Although in some of the experiments outlined the treated film was cleaned and retreated after projection 10 times, in practice this routine is usually not necessary, the treated film requiring cleaning only when indicated by the presence of visible dirt, oil spots, or excessive ground noise. In the case of the tests with the cantol-buffed and edge waxed sample, after projecting 130 times without further treatment of any kind the magnitude of the ground noise was only slightly greater than at the start, the projectors being kept in a very clean condition throughout the tests. This test demonstrates that it is possible to keep the projector sufficiently clean and the rewinder free from dust so that with film treated in the manner outlined no excessive ground noise is produced after 130 runs.

In the absence of the above surface waxing treatment, with newly processed prints it is imperative to either edge wax as recommended or to pass the film through a cleaning machine using a 0.5% solution of light motor oil in carbon tetrachloride. This treatment will apply a thin film of lubricating oil to the entire film surface which will assist in the prevention of the accumulation of ground noise although in view of the slightly tacky nature of the oiled surface, the film will accumulate dust and dirt more rapidly than cantol waxed film and will require cleaning much more frequently.

A. S. C. Men to South Seas

FRANK M. COTNER, A. S. C., and Guy Wilky, A. S. C., have departed for distant climes where each will spend some to considerable time. Cotner has gone to Honolulu where he is to photograph several pictures for the Hawaii Productions, of that city.

Wilky has gone to the South Seas where he will photograph a feature production which Murnan is directing for Colorart-Synchrotone productions.

High Speed Color Device

A high speed process for color photography has been developed, it is claimed by Paramount camera technicians working in conjunction with representatives of the Technicolor Corporation. The process, which makes it possible to photograph in natural colors the swiftest movements, was tested in an especially fast ballet number in "Pointed Heels."

Progress in the Motion Picture Industry
October, 1929—Report of the Progress Committee, S.M.P.E.

THE most important items of progress during the past six months have been the extensive use of all-color sound pictures, or pictures with extensive color inserts, and several demonstrations of enlarged projected pictures by the use of film wider than 35mm.

Only two-color subtractive processes are at present in vogue and in one process extensively employed, two dye images are produced in a single layer film by imbibition. Although some three color imbibition films have been prepared, they have not been publicly displayed.

To date only one type of wide film has been put on the market, this being 70mm. wide. Comment of the trade has been most enthusiastic with regard to its suitability for scenics and news events, but it is apparent that a new photographic technic is required to secure more pleasing perspective in the case of photoplays. Difficulties involved in the more universal adoption of the wide film are the present lack of standardization of size, the necessity for a greater illumination at the projector aperture, and the prevention of film buckle.

Studios in Hollywood are now producing only about 5% of silent pictures. When it is considered that only one year ago the first dramatic pictures were shown before the society, notably "The Singing Fool," the remarkable progress made since that time is apparent. There has been a steady improvement in the quality of sound reproduction, notably in the theatre, but in many cases the quality in the theatre falls far short of that which the film is capable of producing when it leaves the studio. Much still remains to be done in the way of improvement even with the best of recording. With the high quality music given by the modern radio receivers the public is realizing that the average theatre music is not equal in quality to that emanating from their radios at home.

Notable advances in studio technic have been (a) the tendency to use a minimum number of microphones and eliminate "mixing," (b) the silencing of cameras such as by means of insulating coverings thus permitting greater freedom of camera location, (c) the tendency to use more live studios so as to simulate more closely natural sounds, and (d) the non-simultaneous recording of scene and sound.

A noteworthy advance in reproducers has been the introduction of the condensor or electrostatic reproducer consisting of a rubber diaphragm coated with aluminum foil and stretched across a metal grid. Apart from the high quality resulting, the reproducer occupies no more space than the average screen and can be raised and lowered just as easily.

No fundamental advances have been made in the field of stereoscopic motion pictures and although some of the sponsors claim that their wide film processes give stereoscopic effects, they are at the most pseudo-stereoscopic. A much higher order of relief is noticeable in many of the pictures in color.

Although color pictures have been televised during the past six months, the probability of television usurping the present motion picture in the immediate future appears to be very remote.

Respectfully submitted,
J. I. Crabtree, Chairman
J. A. Ball
F. A. Benford
L. J. Buttolph
G. L. Chanier
J. W. Coffman
R. E. Farnham
G. E. Mather
R. Rogers

Quick Test to Determine Degree of Exhaustion Developer

By M. L. DUNDON, G. H. BROWN *and* J. G. CAPSTAFF
of Kodak Research Laboratories

(An Abstract of paper read at S. M. P. E. Fall Meeting)

AN EXHAUSTED borax developer not only requires a longer time of development than a fresh one but also causes an apparent loss of exposure. A similar effect is obtained by adding bromide to the fresh developer. It is suggested that the loss of exposure is caused by the solvent action of the sulfite while the start of development is being delayed by the bromide. The degree of exhaustion of developer can be quickly determined by dipping an exposed standard strip of film in the developer for a definite short time, and then immersing the strip in a solution which stops development and makes the undeveloped emulsion stable when exposed to light. Such a test has been found to be very reliable.

CAMERA AND PROJECTION APERTURES FOR SOUND-ON-FILM PICTURES

By LESTER COWAN
Ass't Secretary, A. M. P. A. S.

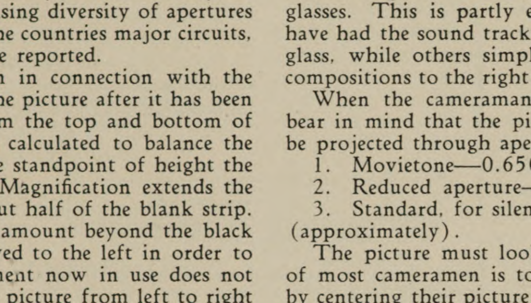
MUCH concern has been aroused among studio technicians by the fact that in some theatres the heads and feet of characters and other vital elements of the picture are being cut off in the projection of sound-on-film pictures. Projectionists are inserting in their film gates masks which mats out in addition to the sound track a portion from the top and bottom of the picture sufficient to reduce the height to about three-fourths of the reduced width. The smaller 3x4 picture is enlarged by a half inch shorter focal length lens to fill the screen. Recentering is accomplished by auxiliary devices which move the lens from right to left. Unless due allowance is made in production for this smaller aperture vital portions of the picture will almost certainly be cut out. Furthermore, in the Academy's recent survey of theatrical practice on this point, a surprising diversity of apertures was found; out of the replies of 13 of the countries major circuits, no less than nine different apertures were reported.

Probably the most difficult problem in connection with the reduced aperture method is to recenter the picture after it has been enlarged. The amount matted out from the top and bottom of the picture in reducing the aperture is calculated to balance the increased magnification so that from the standpoint of height the picture will fit into the screen frame. Magnification extends the left margin of the picture to cover about half of the blank strip. The right margin is extended an equal amount beyond the black border so that the picture must be moved to the left in order to be properly centered. Standard equipment now in use does not provide for this need. Movement of the picture from left to right is not possible due to the stationary base which gives a fixed position to the projection machine.

There are two ways in which recentering may be accomplished, both involving the use of auxiliary devices. The first and most common method of recentering is by moving the lens slightly to the left. This moves the optical centre of the lens 0.08 inches to the left, introducing spherical aberration which is sometimes noticeable on the screen, but usually not enough to be considered a defect. An "Ilex" lens has been developed with optical corrections permitting sharp definition at two focal lengths, thus simplifying the procedure by eliminating the necessity of actual lens changing. The second method of recentering is by the use of a device which makes it possible to move the equipment on a horizontal plane. The newest development which promises a satisfactory solution to the problem is a shifting device developed by the Bell Laboratories. The shifting device consists primarily of these two units: a pivot-plate for the forward pair of legs, and a plate incorporating a pedal mechanism for the rear pair of legs. Provisions are made for anchoring the footpads of the reproducer set to these units, which are in turn bolted securely to the floor. By proper adjustment of the stop screws on the pedal mechanism a full-sized picture is centered by depressing the right-hand pedal until further motion is halted by the adjustable stop, and the smaller picture is centered by depressing the left-hand pedal. The locking device, which consists of a quick-release screw clamp, maintains either position and assures the picture remaining centered.

Studio Practices

Twelve studios reported in the Academy survey. All were making allowance in photography for the sound track either through a definite marking on the camera ground glass or through instructions to cameramen to centre their pictures to the right so that the addition of sound track would not affect their composition. Two of the studios—who had been in communication with their own theatre chains, were informed of the new practices and accordingly had markings put on their camera ground glasses delineating a smaller rectangle within which all action was to be photographed. The pictures photographed within these new ground glass markings did not suffer from the reduced aperture practice.


Restoration of Aperture to 3 x 4 Proportion on Basis of Dimensions Recommended by Academy of Motion Picture Arts and Sciences.

Circle Represents a Head Close-up.

A–Original "B and H" Silent Aperture—.720"x9375".

B–A with Sound Track—.085".

C–Recentering of B— —Account of Sound Track.

D–C Recentered—with Camera Aperture as shown—.620" x .835"

E-Head Reduced to meet projection requirements of Proj. Aperture in F.

F–New Proj. Aperture, size .600" x .800", inside Camera Aperture showing Head reduction.

G *and* H represent cutting of Head in Projector by improper Framing.

By V. E. Miller, *Paramount-Famous-Lasky*

Diagram illustrating aperture changes proposed

Most of the studios, however, did nothing to anticipate the new theatre methods, and it is also interesting to note that twelve studios reported twelve different markings on their ground glasses. This is partly explained by the fact that some studios have had the sound track width indicated by a line on the ground glass, while others simply instructed cameramen to center their compositions to the right so as to make room for the sound track.

When the cameraman looks into his ground glass he must bear in mind that the picture which he is composing is likely to be projected through apertures of three different sizes:

1. Movietone—0.650-in.x0.820-in. (approximately).
2. Reduced aperture—0.600in.x0.800-in. (approximately).
3. Standard, for silent and disc release—0.680-in.x0.906-in. (approximately).

The picture must look well in all three forms. The practice of most cameramen is to favor the reduced Movietone apertures by centering their picture a bit to the right. A properly composed picture will confine the action within the smaller area with a suitable background and foreground for theatres using the Movietone or Standard apertures. If any of the three forms suffers it will most likely be the picture for silent or disc release.

In this connection a comment made at a recent Academy meeting is interesting:

"There is a way, I think, whereby we can satisfy both silent picture exhibitor and the sound picture exhibitor, giving them both an identical composition in the 3x4 ratio. The method is just the reverse of what Photophone did when they first began. The method is to take the picture in the camera on a smaller size, masking off the rest of the film, then printing the release for the sound version in the usual manner and printing the release for the silent version on optical printers. Such a printer is being used back in New York. ***At one time, nobody knew how to do optical printing, but with all the skill there is in this business, it could be done."

The facts above were presented at a joint meeting of the Technicians' Branch of the Academy of Motion Picture Arts and Sciences with the American Society of Cinematographers and the local chapters of the Society of Motion Picture Engineers and the American Projection Society. After an extended discussion the meeting decided to refer the survey data to a joint committee composed of representatives of the four organizations.

At a second joint meeting of these four societies the joint committee reported back the recommendations embodied in the following resolution, which was adopted by a unanimous vote of the four societies:

WHEREAS, investigation has revealed wide variance in theatre projection practices and that there is no effective standard aper-

(Continued on Page 46)

SOME PROPERTIES OF FIXING BATHS

Part Two of an Unusually Interesting and Informative Paper Presented at Spring Meeting of S. M. P. E. at New York City, May 6-9, 1929

By J. I. CRABTREE *and* H. A. HARTT

Second part of Communication No. 396 from the Kodak Research Laboratories, Rochester, N. Y., will be published in three parts. The final installment will appear in the December issue.—EDITOR'S NOTE.

POTASSIUM and chromium alum are the most desirable hardening agents for use in an acid fixing bath, but the present discussion will be confined exclusively to the hardening properties of fixing baths compounded with potassium alum.

At the outset, it was considered that a fixing bath formula might be compounded by merely determining (a) the quantity of alum necessary to produce satisfactory hardening, (b) the quantity of acid necessary to prevent the precipitation of aluminium sulfite on the addition of a given quantity of developer to the alum solution, and (c) the quantity of sulfite which it was necessary to add to this mixture to prevent the precipitation of sulfur from the hypo in the presence of the acid.

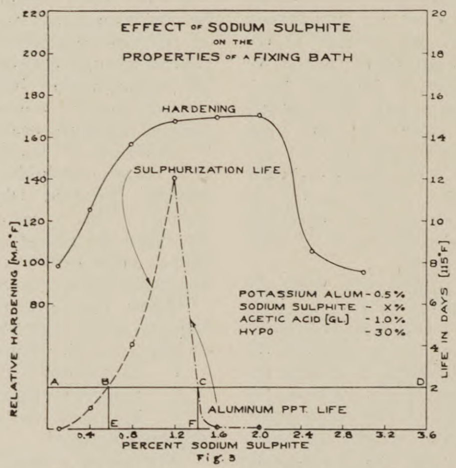


Fig. 3. Effect of the addition of sodium sulfite to a fixing bath on (a) the hardening properties, (b) the sulfurization life, and (c) the aluminium precipitation life.

Preliminary experiments indicated, however, that the hardening produced by a fixing bath was not merely a function of the alum or acid content, but was determined by the relation between the concentration of acid, sulfite, and alum and was independent of the quantity of hypo. Therefore, in order to determine the correct proportion of the various constituents to produce an acid hardening fixing bath having any desired properties, it was necessary to study the effect of each constituent in the presence of varying proportions of the other two constituents.

In Fig. 3, the full line represents the progress of hardening on the addition of sodium sulfite to a bath containing 0.5% alum, 1.0% acetic acid, and 30% hypo. The "dash" line represents the tendency of such a bath to precipitate sulfur with various concentrations of sulfite, while the "dash and dot" line indicates the tendency of the bath to precipitate aluminium sulfite with increasing additions of sulfite. The last two curves are plotted in terms of days of storage at 115° F., as indicated on the right hand side of the chart.

Figs. 4 and 5 represent a multiple set of curves corresponding to those shown in Fig. 3 for fixing baths containing 0.5% and 1.0% of potassium alum, varying concentrations of acetic acid (0.5 to 3.0%), and increasing concentrations of sulfite.

1. *Factors Influencing the Hardening Properties of Potassium Alum Fixing Baths*

From a study of Figs. 3, 4, and 5, it is seen that (1) the hardening produced is a function of the relative proportion of the acetic acid, sodium sulfite, and potassium alum; (2) for given quantities of sulfite and alum the hardening decreases as the concentration of acid increases; (3) for given quantities of acid and alum the hardening increases to a maximum with increasing concentration of sulfite after which the hardening decreases, that is, there is a critical quantity of sulfite for each concentration of acid which gives maximum hardening; (4) the maximum hardening produced in any case increases when the concentration of alum is increased; (5) in any particular case, the maximum hardening obtainable with a given concentration of alum decreases as the concentration of acid increases. The decrease is not appreciable with acid concentrations below 2.0%, but it is more marked as the acid concentration is increased above this quantity.

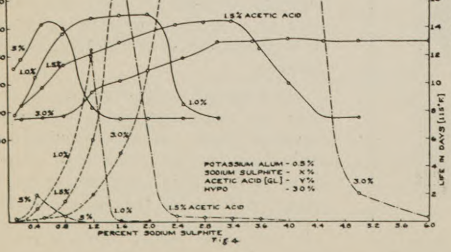
The effect of temperature on the hardening produced by a fixing bath is shown in Fig. 6, which indicates that the hardening increases slightly as the temperature of the fixing bath increases. The time of fixation also affects the hardening produced as indicated by Fig. 7. The age of a potassium alum-acetic acid fixing bath previous to use, has little or no effect on hardening properties as is likewise shown by Fig. 7. The quantity of alkali in the film when placed in the fixing bath also affects the hardening produced as indicated by the following table:

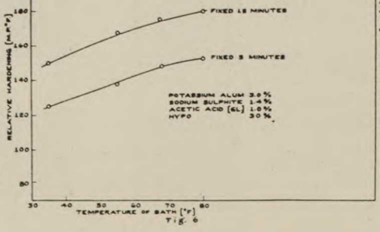
Table II

Effect of Time of Rinse Between Development and Fixation on Hardening Properties of a Fixing Bath

Time of Rinse	Rel. Hardening (M. P. °F.)
0.0 min.	170°F.
0.5 "	185°F.
1.0 "	186°F.
2.0 "	188°F.
5.0 "	190°F.

2. *Factors Influencing the Sulfurization Life*—From the





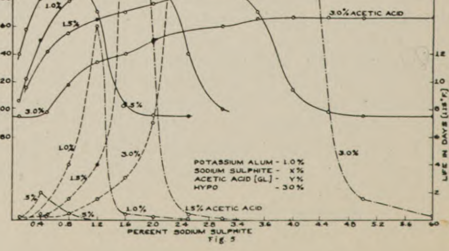


Fig. 4. Effect of the addition of sodium sulfite and acetic acid on the properties of a fixing bath containing 0.5% potassium alum. Fig. 5. Effect of the addition of same chemicals to a bath containing 1.0% potassium alum. Fig. 6. Effect of temperature of a fixing bath on its hardening properties.

curves shown in Figs. 3, 4, and 5, it is seen that (a) for equal concentrations of alum and acid, the sulfurization life increases rapidly as the quantity of sulfite increases, the sulfurization life apparently increasing logarithmically with the concentration of sulfite; (b) for equal concentration of alum and sulfite, the sulfurization life decreases as the concentration of acid is increased; (c) for equal concentrations of acid and sulfite the sulfurization life decreases only slightly with increasing concentration of alum.

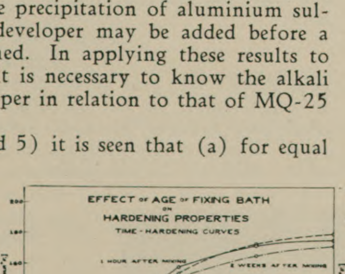
3. *Factors Affecting the Developer Capacity*—In order to determine the developer capacity (the quantity of developer which can be added to the fixing bath before precipitation of aluminium sulfite occurs) for all of the formulas represented by the various points in the curves shown in Figs. 3, 4, and 5, it would have been necessary to prepare a large quantity of these formulas and determine the quantity of developer necessary to precipitate aluminium sulfite in each case. It was considered desirable, therefore, to find a method whereby the curves already obtained could be interpreted in terms of "developer capacity." Curves 3, 4, and 5 show that with an increasing quantity of sulfite there is a tendency to precipitate aluminium sulfite, while with an insufficient quantity of sulfite, sulfur tends to precipitate. It is between these two limits that a suitable stable fixing bath exists; in other words, there is a definite quantity of sulfite which may be added to any given formula which is satisfactory with regard to sulfurization life before the precipitation of aluminium sulfite occurs. It was thought that it might be possible to find a definite relation between this quantity of sulfite and the quantity of developer which would cause similar precipitation. Experiments were therefore made to determine this relation by comparing the quantity of developer in one case, and the quantity of sulfite in the other case necessary to precipitate aluminium sulfite in the case of typical formulas. The formulas tested were so chosen that the sulfurization life was equal in all cases. The following table gives the results of these experiments:

Table III
The Relative Effect of Developer (MQ 25) and Sodium Sulfite on the Precipitation of Aluminium Sulfite in a Fixing Bath

	% Sodium Sulfite to Cause Precipitate		% MQ 25 to Cause Precipitate		Ratio MQ 25 Sod. Sulfite		Composition of Bath			
	70°F.	115°F.	70°F.	115°F.			% Potassium Alum	% Sodium Sulfite	% Acetic Acid	% Hypo
1.	4.6	1.0	30	7	6.5	7.0	1.5	1.2	1.5	30
2.	5.5	2.6	36	20	6.6	7.7	1.5	3.0	1.6	30
3.	2.4	1.4	15	8	6.3	5.7	1.0	1.0	1.5	30
4.	5.0	5.1	40	34	8.0	6.7	0.5	1.5	3.0	30
5.	1.7	3.8	14	22	8.2	5.8	3.0	2.6	3.0	30
				Average	7.1	6.6				

These results show that although the relation is not constant the results are sufficiently uniform to permit their use in determining the relative developer capacity from the curves in Figs. 4 and 5. It is considered that the ratio of approximately 1:6 is permissible; that is, for 1.0% sodium sulfite, which may be added to a given formula before precipitation of aluminium sulfite occurs, 6.0% of MQ 25 developer may be added before a similar precipitate will be formed. In applying these results to developers other than MQ 25 it is necessary to know the alkali and sulfite content of the developer in relation to that of MQ-25 developer.

From the curves (Figs. 4 and 5) it is seen that (a) for equal concentrations of alum and acid the developer capacity decreases with an increased quantity of sulfite; (b) for equal quantities of sulfite and alum the developer capacity increases as the concentration of acetic acid increases; (c) for equal quantities of sulfite and acid the developer capacity is only slightly affected by an increased concentration of alum.



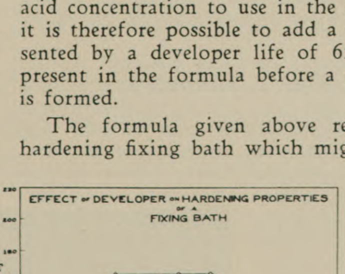


Fig. 7. Effect of age of fixing bath on its hardening properties. Fig. 8. Effect of the addition of developer on the hardening properties of a fixing bath.

4. *The Application of Hardening Curves to the Preparation of Fixing Baths Having Required Properties.*—From the curves (Figs. 3, 4 and 5) it is possible to compound a fixing bath having any given properties. The following three factors must be known before a suitable fixng bath may be compounded: (a) the hardening desired: (b) the developer capacity, and (c) the sulfurization life. With this information available, the series of curves (Figs. 3, 4, and 5) which gives the maximum hardening desired is selected and from these curves the necessary quantity of alum is determined. Then, by drawing a line parallel with the sodium sulfite axis at a distance from it representing the desired sulfurization life as indicated on the axis "life in days," and determining the limits of the sulfite content between the sulfurization and aluminium precipitation curves, the quantity of acid necessary is indicated by the curves whose sulfite limits correspond to one-sixth of the developer life desired. Then, by projecting the point of interesection of this parallell line and the sulfurization life curve to the sodium sulfite axis, the quantity of sulfite sufficient to give the necessary sulfurization life is indicated. This gives the complete hardening formula, which may be added to a quantity of hypo as determined by the amount of film to be fixed and the rate of fixation desired.

5. *Example of Use of Curves in Compounding a Fixing Bath Formula*—If it is desired to compound a fixing bath having the following properties: relative hardening 160°F., sulfurization life 2 days (110°F.), developer capacity 6% MQ 25, proceed as follows:

It is seen from Fig. 3 that the maximum hardening produced by an 0.5% potassium alum solution with varying concentrations of sodium sulfite is approximately 160°F. Draw a line parallel with the sodium sulfite axis at a distance from it represented by two days on the sulfurization life curve at B and the aluminium precipitation curve at C. Project the points B and C to the sodium sulfite axis to the points E and F, respectively. The difference in the sodium sulfite concentration represented by these two points multiplied by 6 gives the relative developer capacity for the acidity (1.0%), which is represented by these curves; that is, 1.5%—0.6%=0.9%; 0.9%X6=5.4% equivalent developer capacity. The quantity of sulfite represented by point E (0.6%) is the quantity necessary to give the desired (2 days) sulfurization life. This information gives the proportion of the various ingredients (0.5% potassium alum, 0.6% sodium sulfite, 1.0% acetic acid) required to produce a fixing bath having the above desired properties. This hardener may then be added to a given hypo solution and the fixing bath is then complete.

Fig.3 was used for the above example merely for the purpose of simplicity. In order to compound fixing baths having properties other than the above it is necessary to refer to Figs. 4 and 5 or additional sets of curves for other concentrations of alum.

In choosing the alum concentration, the minimum quantity which will give the necessary hardening is desirable. The quantity of sulfite to insure the necessary sulfurization life (x days at 115°F) is then determined as indicated above. The quantity of acid is decided upon by finding the set of curves (aluminium precipitation life and sulfurization life, such that the space between them at a distance of two days* from the sulfite axis corresponds to one-sixth of the developer capacity. The acid concentration represented by this chosen set of curves gives the acid concentration to use in the formula. With this fixing bath it is therefore possible to add a quantity of sulfite x (as represented by a developer life of 6x) in addition to that already present in the formula before a precipitate of aluminium sulfite is formed.

The formula given above represents a suitable stable acid hardening fixing bath which might be used in cases where only a relatively small quantity of developer is carried into the fixing bath. Fig. 8 shows the effect of the addition of developer on the hardening properties of this formula. It is seen that the hardening at first is not as high as desired, but with the addition of further developer (about 5% MQ 25) the hardening falls off and the bath is rendered useless by the formation of a precipitate.

(Continued on Page 40)

As THE EDITOR SEES IT

Home vs. Theatre

GILBERT SELDES in *Film Daily* brings up a point that should be food for thought to those in the picture business. It is the idea that within the next year and a half the talkies will find themselves face to face with the home-talkie with a result that bodes ill for the theatre talkies. He brings forward the statement that the talkies will have to improve or they will be hard hit by these home-talkies.

Mr. Seldes has his ear to the ground and his finger on the public pulse when he speaks and picture producers would do well to heed his warning. It doesn't take the brains of a mental giant to figure out that as a whole the stories have been sacrificed for the talkies. And this is exactly what is going to harm them.

Men and women throughout the nation have now become accustomed to the talkie. It is no longer a novelty to hear a voice from the screen. But how long can we expect them to be dragged into the theatres for novelty alone?

The silent films had been brought up to a high point in story form and cinematographic artistry just before the talkies hit us. It took years to do it. Then cinematographic artistry and story were tossed overboard in the mad scramble to produce a bigger noise than the other fellow. The idea of entertainment seems to have been forgotten except in occasional pictures. A little child can be entertained with a rattle or a drum or any kind of noise. However, the public has grown up in sound and something more than a din must be given or disaster is ahead.

Masters of the cinematographic art have little opportunity to use that art because microphones must come before art. The cinematographers still are as clever as ever, but they have little chance to prove it. It will be for the betterment of the entire industry if the picture makers realize the situation before it is too late, and give us back story and photographic beauty.

S. M. P. E.

YE EDITOR had the pleasure of attending the fall meeting of the Society of Motion Picture Engineers at Toronto last month, and takes the opportunity to say that it was truly an inspiration.

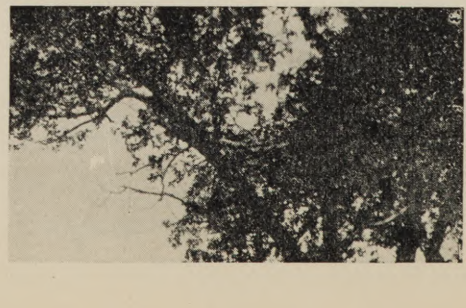
While sitting there at one of the sessions the thought came to the writer that it is too bad that the picture makers as a whole do not take a leaf out of the notebook of the S. M. P. E. and —8—CINEMATOGRAPHER 7613 .... Mac give more effort to achieving something of value to the industry and less to politics.

Relatives and studio politics are the two curses of the picture industry. And while the people who seek publicity and positions for relatives and friends are playing politics, these Engineers are quietly effacing self and in the laboratories and elsewhere are consistently producing the marvelous technical improvements that make our pictures the world's best. To be present at one of their conventions is an inspiration.

Shoes or Art?

THE foreign situation as far as American films are concerned causes one to wonder just what is the real reason the peoples of lands across the seas try to make importations of our films so difficult.

You hear various reasons advanced by those who put up the film bars. They say they do not want to stifle their own picture art and business and what not. But, to a casual observer sitting on the sidelines the though persists that art and pictures, for that matter, have much less to do with it than automobiles, shoes and other articles of a commercial nature. From various sources the information has been trickling in to the effect that American films have increased the sale of American autos and clothing abroad. In fact, it has been rumored that one British firm, after spending much money on the development of shoes, had to spend an equal amount changing their lasts because American shoes on the screen had caught the fancy of the British public. So, after all, it may be shoes that pinch and not art.



Christmas Seals

AS YULETIDE approaches we again see the familiar Christmas seals. Little stamps costing us but a trifle, but with a result that is wonderful. Every seal sold means another blow at the dread tuberculosis disease. Let's all buy more this year and help a good fight.

Eastman—Brulatour

IN HOLLYWOOD the two names—Eastman and Brulatour—are synonymous with service and cheerful coöperation. Genial Eddie Blackburn, head of the Hollywood branch of the J. E. Brulatour company, together with Emery Huse and the entire staff, are the soul of service and make one feel glad to do business with their firm.

While on his recent trip to the S. M. P. E. convention this writer was fortunate enough to meet a big group of the Eastman men from Rochester. It seemed as though the writer had never left Hollywood, for the same splendid atmosphere surrounded the Rochester group. Ted Curtis, George Blair, Cowling, Crabtree, Sandvik, and all the others. Then at Rochester, where the writer stopped off for a couple of days, the same spirit prevailed—a spirit of helpfulness and cordiality—service.

Finally, in New York at the Brulatour office the same spirit again—J. E. Brulatour himself, Bill German and Charlie Bonn, all really happy in making other people happy. No wonder the Eastman company and Brulatour are a success.

Congratulations

THE second number of the new magazine, "Projection Engineering," has just reached this editor's desk, and he takes this opportunity to compliment the Byron Davis Publishing Co., and Mr. M. L. Muhleman, editor.

This new magazine is a publication anyone should be proud of, and one which no projectionist can afford to be without. Real information of worth and merit is contained in its pages and even a casual perusal could hardly fail to give the reader much excellent information, while careful study makes it invaluable.

The American Cinematographer takes real pleasure in welcoming this magazine and it is our hope that it will continue to grow and prosper.

Thanksgiving

ONLY a comparatively few more days and we will be observing Thanksgiving again. I wonder how many of us will give the day a thought other than that it is a time when most of us eat turkey!

The other day I was walking down Hollywood boulevard when I saw a man struggling along the sidewalk somewhat after the manner of a crab. Poor devil, he had no legs. They were gone from his hips. On his hands were a pair of leather pads. He dragged himself along with these. On his back was a bag of pencils. And on his face was a SMILE. Business was good and he was happy.

The thought hit me that most of us should take stock of ourselves and the blessings of health that are ours, and that perhaps most of us, who have forgotten how to pray, should get down on our knees on Thanksgiving Day and thank God that we are even alive.

Criticism

DURING the past seven months revolutionary changes have taken place in the AMERICAN CINEMATOGRAPHER magazine. Fiction, features, amateur articles have been introduced. The cover policy has been changed and, in general, the entire make-up of this magazine has been done over.

We have received much favorable comment from various quarters and, naturally, some adverse criticism from some sources. However, the world is changing continually. If it didn't we would still be traveling in stage coaches. We would like to hear more from our readers regarding their reactions. After all, this is your magazine and it is our aim to make it the greatest interest to you. Suggestions and criticism will be welcomed as gladly as praise. So give us your reaction.

FOR TEN YEARS THE AMERICAN CINEMATOGRAPHER HAS BEEN ENRICHING THE ENTIRE MOTION PICTURE WORLD WITH THE WISDOM ACCUMULATED THROUGH THE WIDE EXPERIENCES OF IT'S MEMBERS

OUT OF THIS SHALL ARISE AN INSPIRED CINEMATOGRAPHY WHICH SHALL BRING ABOUT IN GOOD TIME A BIGGER AND BETTER CINEMA

GLENN R. KERSHNER
A.S.C.

Yesterday

When Hollywood was "Just an idea"–

J. E. BRULATOUR
started to build a service for the progressive
cinematographer
and in cheerful co-operation with the
EASTMAN KODAK COMPANY
this service has been consistently enlarged and developed, until

Today

WE STAND SUPREME
WITH THE BEST SERVICE
AND THE
BEST FILMS

**J·E·
BRULATOUR
Inc.**

NEW YORK–HOLLYWOOD–LONG ISLAND CITY

A. S. C. Research Committee Completes Make-up Tests

AT THE regular October Meeting of the American Society of Cinematographers, the Research and Educational Committee, headed by Victor Milner, A. S. C., presented the results of its recent series of make-up tests. These tests are as a result of the general adaption of Incandescent lighting and Panchromatic films for studio production, and directly continue the famous Mazda Light Tests made by the A. S. C. in April, 1928. At that time, the need of an entirely new range of make-up materials was clearly shown, but due to the sudden advent of such amazing technical innovations as sound, natural-color cinematography, and wide-film, no concerted study of make-up was possible.

The need, however, still existed, and was met by the development of an entire new line of cosmetics, termed Panchromatic Make-up. This is a complete range of make-up, every shade being a perfectly balanced blend of colors from the entire range of the spectrum, so blended as to create a beautiful flesh tone, which photographs practically the same under any style of lighting—incandescent, arc, or sunlight. The color components are so balanced that no matter what style of lighting is used, there is always a satisfactory balance of color, preventing the 'washed out' appearance so often noticed with the old style make-up. Furthermore, in this new line of cosmetics, the entire scale, from the lightest numbers to the darkest, maintain the same balance, eliminating the necessity of making separate tests of a subject each time the make-up is changed. The photographic values of the whole line are constant, and, as the steps by which the new colors are graded are in all cases alike, one need simply specify a make-up one, two or more shades lighter or darker than the one in question, and the problem will be solved.

Moreover, this gradation is preserved not only in the grease-paints, but in the lining, lip-rouge, and powders as well. The lining-colors and lip-rouges maintain the same desirable photographic balance that the grease-paints do, while the powders are chromatically identical with their corresponding grease-paints. This last is truly an important development, for as most actors habitually powder immediately before each scene, with the old-style of make-up they progressively lightened their faces until by the end of the day they were entirely different from the original make-up; now, however, this continual powdering has no such effect, as the powder is an exact chromatic duplicate of the underlying grease-paint.

The tests made by the Reserch Committee were made at the Tec-Art Studio, under as nearly as possible the same conditions met with in regular production. Strictly standard equipment was used throughout. The lighting was arranged with little attempt at modeling, and was practically identical throughout the entire series of tests. The subjects were chosen less for beauty than for the opportunities they offered for corrective make-up. In all cases the tests included identical views of the subject without make-up, with the old style, and with the new Panchromatic makeup; also, in some cases, direct comparisons of any two of these. The resulting films were processed under standard conditions, and as nearly uniformly as possible. Thus these tests very closely represent actual production conditions throughout, and as such they form a most valuable reference work on the subject of modern cinematographic make-up. Furthermore, the Research Sommittee, in coöperation with the Factor organization, is devising a convenient quick-reference make-up chart with which all A. S. C. members will soon be supplied, and is also coöperating in experiments looking toward the standardization of make-ups for natural color cinematography. These latter experiments are still proceeding, and their results will be announced in due time.

Coaching Football With Movies

THE movies have been growing increasingly familiar in College classrooms of late, and now Chick Meehan, famous coach of N. Y. U.'s football teams, has added them to his coaching staff. Pathe news has agreed to supply him with special prints of their films of each of his team's games, an arrangement which will be of great value in studying and improving the work of individual players.

Rosher with Glyn

London—Elinor Glyn is making her first talking picture at the British International Pictures' studio. Charles Rosher, A. S. C., is to direct the photography.

FOR XMAS
Give a Subscription to the
American Cinematographer

Benoit, A. S. C., in France

IS THE French cinema at last beginning to understand its resources? We have commented many times how much it would profit by turning aside from the worldly intrigues and society dramas to reflect more exactly the simple life, to clear the mind of human ills. The brutal, tragic Russian cinema and the touching sincerity of the young American school bring valuable lessons. But there are some among us who appear to be striving for similar effects.

Messrs. Jager-Schmidt and Georges Benoit, A. S. C., have just made a film entitled *Fumes*, in which the action takes place in the setting of the mines, and has for its hero a rough man and a melancholy young girl, individuals who are unknown to us and to themselves.

Fumes, whose title alone indicates its unique character, will undoubtedly be one of the important productions of the coming season. It is interesting from many angles, and the conditions under which it was made are exemplary. All of the shooting took place at Bruay-en-Artois; it is probably the first time that a film of such magnitude has been made in the North country, and that, we think, is indicative of possible future activity in that district which is so far from lacking in cinematic locations.

"We reached Bruay, August 11," I was told, "and the last scenes will be made about September fifteenth. We have had the great advantage of being able to make on the same spot both our exteriors and interiors. The apparatus, lights, etc., not being conveniently taken down into the mine, we put up in front of the old Bruay casino, a gallery fifty metres long, exactly duplicating those below, with its rails, tramway, turntables, telephone communication—a real marvel, from the plans of M. Becq, a young mining engineer. Messrs. Jager-Schmidt and Benoit have made all the scenes there of the work in the mine, and even staged a flood which gave a perfect illusion of actuality.

"As for the other scenes, as you see, we have used the actual settings of the village and mines. The mine is our principal collaborator, and we have found the population very intelligent and picturesque types, such as those who play Cafougnette and the barmaid Simone Landreau, adding again to the truthful atmosphere of the picture.

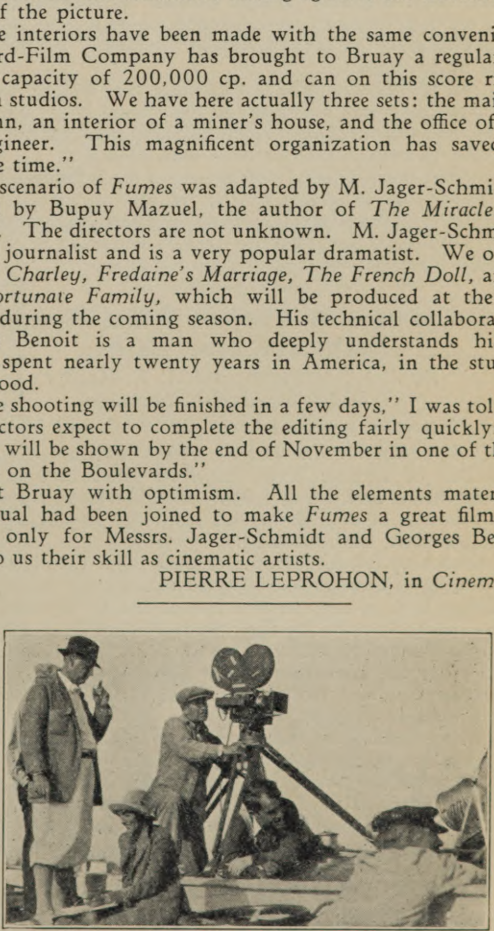
"The interiors have been made with the same convenience, as the Nord-Film Company has brought to Bruay a regular studio with a capacity of 200,000 cp. and can on this score rival the Parisian studios. We have here actually three sets: the main room of an inn, an interior of a miner's house, and the office of a mining engineer. This magnificent organization has saved much valuable time."

The scenario of *Fumes* was adapted by M. Jager-Schmidt from a novel by Bupuy Mazuel, the author of *The Miracle of the Wolves*. The directors are not unknown. M. Jager-Schmidt was a noted journalist and is a very popular dramatist. We owe him notably *Charley*, *Fredaine's Marriage*, *The French Doll*, and now *The Fortunate Family*, which will be produced at the Odeon theatre during the coming season. His technical collaborator, M. Georges Benoit is a man who deeply understands his craft, having spent nearly twenty years in America, in the studios of Hollywood.

"The shooting will be finished in a few days," I was told, "and the directors expect to complete the editing fairly quickly. Then the film will be shown by the end of November in one of the great theatres on the Boulevards."

I left Bruay with optimism. All the elements material and intellectual had been joined to make *Fumes* a great film. It remained only for Messrs. Jager-Schmidt and Georges Benoit to prove to us their skill as cinematic artists.

PIERRE LEPROHON, in *Cinemonde*



ALVIN WYKOFF, A. S. C., president of the local No. 659, I. A. T. S. E., snapped while on location shooting "Out to Kill," starring Joseph Schildkraut. John Robertson is standing behind him.

Cameraman's Work Doubled

ADDITION of spoken dialogue to the screen has doubled the work of cameramen, according to George Folsey, A. S. C. head cameraman at Paramount's Long Island studio.

"Just as on the stage, dramatic dialogue calls for a variable 'mood' lighting, so the talking picture presents the same problem, but to even a greater extent," says Folsey. "The inflection of the voice of the actor or actress determines, many times, the camera angle and the degree of light.

"Then, of course," he continues, "working in sound-proof boxes, the position of our camera inside that confined space must be determined with an almost mathematical degree of certainty. Our men must be trained and rehearsed to handle the lights necessary for a scene before the action takes place, and must be able to work in perfect silence.

"The microphone itself has added another new problem. We must know when to shoot under or over one. That presents still another angle of shooting which must be taken into consideration. Then the microphone must be placed in proper position, either on the floor, suspended overhead, or even hidden in a piece of scenery.

"Lighting for scenes follows inflections of the voices, their tone and quality, and the general theme of the dialogue."

Method of Testing for Presence of Sodium Thiosulfate in Motion Picture Films

By J. I. CRABTREE *and* J. F. ROSS
of Kodak Research Laboratories

(An Abstract of paper read at S. M. P. E. Fall Meeting)

A METHOD of testing for the presence of sodium thiosulfate in motion picture film has been worked out which consists of placing strips of processed films in a mercuric chloride-potassium bromide solution. If the film contains an appreciable quantity of sodium thiosulfate the solution becomes opalescent, the turbidity being roughly proportional to the quantity of hypo present. It is possible to detect the presence of 0.05 milligrams of sodium thiosulfate (crystals) in motion picture film by this test.

Some of the factors which determine the rate of fading of silver images have been outlined and the critical hypo content and degree of washing necessary with negative and positive motion picture film to insure stability have been indicated.

Under ideal conditions it is necessary to wash thoroughly fixed motion picture negative film for 30 minutes and motion picture positive film for 20 minutes in order to eliminate the hypo. Under practical conditions the times are greater according as the conditions differ from the ideal.

Properties of Chrome Alum Fixing Baths and Stop Baths

By J. I. CRABTREE *and* H. A. HARTT
of Kodak Research Laboratories

(An Abstract of paper read at S. M. P. E. Fall Meeting)

A DISCUSSION of the factors which control the hardening action of chrome alum solutions when compounded in stop baths and fixing baths. Suitable formulas are given and the behavior of a recommended stop bath and fixing bath on exhaustion is dealt with in detail.

The hardening properties of a chrome alum solution are very sensitive to slight changes in acidity so that during use as the acid in the fixing bath or stop bath is neutralized by the alkali in the developer carried over by the film, the transition from a hardening to a non-hardening condition is very abrupt. The hardening properties of a chrome alum fixing bath likewise diminish with age even without use and this is attributed to the formation of a green chromium complex which does not harden the gelatin film. Chrome alum baths are especially suitable for high temperature work when excessive hardening is desirable, but for work at normal temperatures potassium alum baths are to be preferred because they harden the gelatin to a less degree, they do not lose their hardening properties on standing without use, while they retain their hardening properties for a longer period during use and without revival.

What Next?

Manchuli, Manchuria—What are said to be the first sound pictures taken in front line trenches, were filmed here recently when three American cameramen shot scenes of sporadic fighting between Russians and Chinese.

R-K-O Sound Studio Growth

EXPANSION program involving the expenditure of more than $2,500,000 and providing for the erection of what company officials say will be the largest sound stage building in the world when completed is being planned by R-K-O. The plan is to utilize every square foot of the 12 acres of ground owned by the studio.

Ground will be broken during the next few weeks on the new sound-stage building which will be 500 by 150 feet and contain facilities for the making of four talking pictures at one time. R-K-O will be equipped to film as many as 13 pictures simultaneously. Construction already has started on the new administration building and work is scheduled to begin this week on the rehearsal building.

Other projects called for include the erection of a studio restaurant with a capacity of 250 persons, a new system for the transportation of sets from stage to stage and a sprinkler system operating in every building in the studio.

Color Helps Stage Players

USE of color in pictures in the next two years will bring a great number of players from the legitimate stage who had failed in black and white camera tests, Dr. Herbert T. Kalmus, president of Technicolor, predicts.

"Recent improvements in the technicolor process have made it possible to reproduce flesh tints accurately and the exact color of hair and eyes," Kalmus says. "While this is not of so much importance in photographing men, it is vital in presenting women on the screen. Now, when you see a close-up of an actress in color, you see her exactly as she would appear on the stage, from a seat in the front row. Beauty is not so much contour of face as it is coloring and at last the motion picture producer is able to give you his stars exactly as they appear in the flesh."

The Optical Problems of Wide Film Motion Pictures

By W. B. RAYTON
Bausch and Lomb Optical Company

(An Abstract of a Paper read at the Fall meeting of the S. M. P. E.)

THE motion picture industry seems to be about to adopt film wider than the standard 35 mm. film now in universal use. Such a step imposes very grave burdens on the optical systems required for photography and projection. Both in photography and in projection, lenses have been called for which while maintaining the high speed and fine definition necessary for the conditions in the studios and theatres must cover hitherto unrealized fields of view. In projection the question of illumination bristles with difficulties.

The Bausch and Lomb Optical Company has been cooperating with the sponsors of wide film motion pictures by designing the new lenses involved. New photographic lenses which cover a picture area 23x46 mm. at a speed of f:2.3 in focal lengths as short as 50 mm.; new projection lenses which will project, with beautiful definition, pictures of this size in focal lengths as short as 3 inches; and new condensers to bring the brightness of the projected picture up to a satisfactory level have been perfected.

New Method of Blocking Out Splices in Sound Film

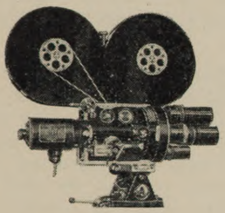
By J. I. CRABTREE *and* C. E. IVES *of Kodak Research Laboratories*

(An Abstract of paper read at Fall meeting of S. M. P. E.)

WHEN two pieces of motion picture film bearing photographic sound records are spliced together end to end an irregularity in the opacity is introduced at the point of junction. This irregularity is abrupt and causes a sudden change in the light transmitted by the film passing the light sensitive element of the sound reproducing device. Therefore, unless some means is utilized for gradually masking off the entire width of sound record in the vicinity of the splice a foreign noise is heard when this part of the record is reproduced in a theatre. One means of masking this area is by applying ink or black lacquer to the film with a brush in a triangular area covering at its widest part the splice in the film sound record. This brush work is slow and difficult to accomplish and the results are often unsatisfactory.

A much simpler and quicker method of rendering the required area opaque has been devised. A patch made of thin black film is cut to the desired shape and perforated on one edge similarly to motion picture film for exact registration by means of a small mounting block. With a quantity of these patches on hand, the theatre projectionist is able to repair quickly a broken sound record film or to join two such films without introducing any noise into the record.

Bell & Howell Resources are the resources of the cinema industry



B. & H. "Pioneer" Professional Studio Camera

At the founding of any great industry, there is always present some small group of pioneers whose clear vision not only lays the groundwork for that industry but which lights the way far ahead. Of such were those men who today continue to supply the cinema with the basic nourishment of its growth as an industry through the medium of Bell & Howell engineering.

More than a score of years has passed since Bell & Howell began the accumulation of knowledge and equipment upon which the technical progress of the industry was to depend. Today, the volume of its engineering data and the completeness of its technical equipment encompass virtually the entire resources of the cinema industry.

Almost daily, new technical projects in the development of motion pictures are begun in the Bell & Howell engineering development laboratories. Almost daily, new and improved film production methods are established. You, also, are invited to submit your problem to this laboratory. The fullest of co-operation is assured.

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GOLD

A Short Story of the Old West

By A. KINNEY GRIFFITH

THE WILD heritage of Apache Indians and a long line of gun-fighting frontiersmen ancestors, made young Joseph Rharon the fightingest man on the Bar Z ranch. His amazing speed and accuracy with firearms was the reason he was selected to bring the monthly ranch payroll from Tonto City. And, for twelve months he brought the $2,000.00 through safely, in spite of the long trail infested with desert outlaws.

On one hot September day he received the payroll from the bank cashier. Putting the money into his saddlebags and leaving the bank, Rharon entered the Tonto saloon for a last thirst-quencher. A half hour before sundown he left the saloon a bit hilarious, and while the hostler cinched the saddle to his horse, Rharon strapped the saddlebags to the cantle.

"So long, see you next month!" he shouted as he started off at an easy dog-trot for the lonely ride to the ranch.

The sturdy bronco covered ten miles of the journey before dark. The rest of the trip was merely a case of smoking an endless number of cigarettes, remaining awake and keeping his eyes peeled for bandits.

At the ranch the cowboys were just leaving the cookshack after breakfast when Rharon rode up and dismounted.

"Hi-yah, 'Rip' Rharon!" the foreman shouted from the bunkhouse. "Got the payroll?"

"You bet," Rharon replied, turning to the cantle to untie the saddlebags. But the saddlebags were not there. "Hell!" Rharon screamed and whirled around like a wild man with his six-shooter drawn and pointed at the cowboys who were gathering around. "Who took my saddlebags?" he snarled, his temper at the exploding point from fatigue, loss of sleep and fear over the money.

His flash of temper subsided as he realized that nobody had been near enough to his bronco to untie the saddlebags since he arrived. He holstered his gun and his black eyes darted around wildly seeking the solution of the mysterious disappearance of the payroll.

"Where's the money, Rip?" the foreman demanded as he approached. "Don't give me any bum excuses!"

"I don't know . . . . ." Rharon began, his black eyes flashing and his brain a-whirl.

"Where's our dinero?" a hard-bitten old timer demanded. "Don't try pullin' any kid stuff on us! Where is it?"

"Aw, I'll bet he's hid it in the mesquite, and is tryin' to gyp us," asserted one cowpuncher.

"Sure he did. Call the sheriff!" another yelled.

"Naw, lynch him!" the old timer snarled.

"I'll take your gun until this is settled, Rharon," said the foreman, stepping closer. "Put up your hands!"

"Like hell!" Rharon snapped, jumping backwards to his horse and drawing his gun with the dazzling quickness for which he was already famous.

"I must have lost those saddlebags on the trail," he announced after mounting and keeping the cowboys covered. "I'm riding back trail to look for them. Anybody that follows, gets shot—I'm rip rarin' to go!"

That last remark was characteristic of him and was the reason for his sobriquet "Rip." He whirled the bronco on its hind legs and raced off on the back trail. Several shots were fired after him, but bending low over the saddlehorn and riding like the wind, he was soon beyond range. The men ran to the corral, roped and saddled their horses and made all haste in pursuing, as they were firmly convinced young Rharon had stolen the payroll.

On horses fresh from an all night rest in the corral, the cowboys soon began to over-take the tired bronco. Rharon realized the men would rope and hang him to the nearest cottonwood tree without giving him a chance to clear himself. He also realized that chances of finding the saddlebags on the trail were mighty slim. Any wandering cowboy might have found them and kept on going as their contents represented a small fortune to the average range man.

Those thoughts made Rip desperate. The trail led into a narrow canyon, at the bottom of which he whirled the bronco and spurred it up the drybed. Before his pursuers arrived at the rim of the canyon and saw he had left the trail Rharon was out of sight around a bend. The men from the ranch rode through and galloped in the opposite direction. Rharon was two miles up the drybed before his pursuers discovered their quarry had eluded them.

RIP RHARON kept under cover by riding through canyons, going around sand hills instead of over them, avoiding main trails, and ever getting farther into the heart of the Painted Desert. A scorching sun shone down. Heat waves danced. Swirling sand storms stung his burning eyes, and his tough desert-bred horse finally began to falter.

During the afternoon the broncho picked up a rock in its shoe and began to limp. Rip dismounted and pryed the rock out with his knife, then walked ahead leading the horse. The pace was slow, and he wondered if he could make Sinking Springs before dying of thirst. His high-heeled boots were torturing him, yet he did not have the heart to re-mount and ride the tired bronco. He was determined to walk, at least until the cowboys should get dangerously close. Wondering where the posse was, he looked over the back trail, saw nothing, and plodded on. It seemed that he and the bronco were alone in the world.

SHORTLY before sundown, he arrived at Sinking Springs and on the verge of total exhaustion, both he and the bronco plunged their mouths into the cool water and drank. Leading the bronco into the shade of a nearby cottonwood tree, Rip felt somewhat refreshed, but utterly lonely and despondant. He was faint from hunger. Where to go and what to do now, was a serious problem. He knew he was an outlaw, yet he had committed no crime.

Suddenly he heard another horse approaching from the desert. He jumped up and lead his bronco behind a huge boulder. There he remained with rifle cocked and watched the springs. All Painted Desert travelers came to Sinking Springs.

In the twilight, Rharon drew a bead on the approaching figure just below the round white blob of its face. A man's heart should be there. Desperation burned through his body, hotter than any desert sun. He was cornered; his horse was tired and he could not go on tonight. His rifle followed the slow approach of the rider. He felt the metal against his trigger finger; the Indian blood coursing his veins urged him to fire, but his white blood urged caution. He gritted his teeth and hesitated. Then it was too late. He was trapped. The rider had suddenly halted, his eyes upon Rip's fresh tracks about the Springs. He wheeled his horse.

"Stop right there!" Rip snapped, rising to full height as he spoke. "Stick 'em up!"

With a swift movement the horseman obeyed and remained mounted while Rip walked around the rock and down the slope. Yet, as the two came face to face, the rider relaxed and fear left him.

"Rip Rharon," he snorted. "I thought you would keep on going." There was contempt in his voice.

"Get off," Rip snarled.

He recognized the rider now. James Harder, a young man whose father had sent to an

(Continued on Page 43)

A scene from "THE GREENE MURDER CASE"—a Paramount Production

ONE SUN—OR ONE THOUSAND?

LET the sun fall into San Pedro Harbor every evening if it will. It's out of date. Shines only half a day or so at a time. Modern studios need modern suns. They use National Photographic Carbons. These suns need no rest—give light day or night. National White Flame Carbons have the penetrating hard-light for long shots.

For colorful scenes, for close-ups, for panchromatic film, put the new soft-light National Panchromatic Carbons in your arc lamps. The light from these carbons is rich in red, orange and yellow-green rays. Gives correct tonal values for all colors. *Allows natural make-up.*

When pure sunlight is wanted, or for night scenes, use National White Flame Photographic Carbons—their rays are identical to June sunlight.

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White Flame and Panchromatic

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To our Customers and Friends:

We desire to express our gratitude for all the kind messages that have come to us since the destruction of one of our Hollywood plants.

The many offers of cooperation from those in the industry whose experience enables them to appreciate the risk which we assume, have done much to assure us that they are sharing a responsibility with us which we genuinely appreciate.

We are thankful that the many safeguards, provided and employed, contributed so effectively to the protection of our customers' property.

Consolidated Service will be maintained.

CONSOLIDATED FILM INDUSTRIES, INC.

NEW YORK HOLLYWOOD

Pictures Ease Tired Nerves of Bankers

HOW motion pictures give them a new medium of self-expression and a new method for advertising their organizations and products, was discussed last month at the Banker's Industrial Exposition in New York.

The speakers on this day were Colonel Roy W. Winton, managing director of the Amateur Cinema League; M. L. Simmons, in charge of motion picture department of the Stanley Advertising Company; Edward F. Stevenson, President of Visugraphic Pictures, Inc., and Arthur H. DeBra, Assistant Secretary of the Motion Picture Producers and Distributors of America. Their addresses were broadcast over WRNY which is the official station of the Banker's Industrial Exposition.

According to Mr. DeBra's estimate, the number of people in the United States who are weekly entertained by the motion picture is about 100,000,000, or equal to the total population of the country. Mr. DeBra also commented on the great service to American export trade which the motion picture renders. "In every American picture shown in a foreign country there are always several articles, typically American, which appeal to the foreign audience," Mr. DeBra explained. "A manufacturer of an expensive motor car was puzzled recently by the unprecedented demand for his car which came from South America, although he had as yet made no particular effort to sell that field. The orders were traced to the influence of an exceedingly popular feature film being shown at that time in South America in which the leading character used an automobile of this exclusive type. And that is true of any number of products used by the actors in the films. An estimate has placed the value of American exports due to the influence of films at $1.00 for every foot of film shown abroad."

Banks are using the motion picture as a medium for advertising more than any other industry or profession, according to Michael L. Simmons, of the Stanley Advertising Company. Their Educational Film Division has made twice as many bank films as of any other type, although no particular emphasis was placed on soliciting this kind of business, according to Mr. Simmons. "I believe this proves that banks find in the screen a scope of expression admirably adapted to their needs," Mr. Simmons continued. "Banks build their advertising propaganda on messages of inspiration, self-preservation and economic security. They achieve their effects by the quality of the idea rather than by exhortation or high pressure selling . . . . In the development of these ideas the screen is particularly effective, and banks seem to have recognized this very definitely."

The hobby of making one's own motion pictures is becoming increasingly popular because it offers a new form of self-expression, according to Colonel Winton, director of the Amateur Cinema League. "The personal movie camera is a new palette and brush with which any one can create his own artistic interpretation of the things he sees," Colonel Winton said. "The amateur movie camera has placed an eighth art at the disposal of mankind. Proficiency in this art is far easier to attain than in the seven other arts and that has contributed to its popularity."

Sound and talking pictures are now practical for advertising purposes as small units are now available which are easily installed in offices, show rooms, business schools and other places where expensive equipment would be prohibitive, according to Mr. Stevenson, president of the Visugraphic Pictures, Inc. With the use of these pictures not only can a manufacturer illustrate his products but he can at the same time, deliver a sales talk with it.

Manufacturers!

Sales representative would like to hear from those desiring representation in the Chicago district. Seventeen years' experience in the technical and sales ends of professional and amateur cine apparatus assures you of valuable and efficient service at all times. Editor of this magazine will vouch for me.
for me.
Address "Representative"
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APOLOGIES TO MICKY ANGELO OR WHAT HAVE YOU
LOUIS LIETS

WE HEARD KING SOLOMON TELL HIS HUNDRED AND FIFTEENTH WIFE..

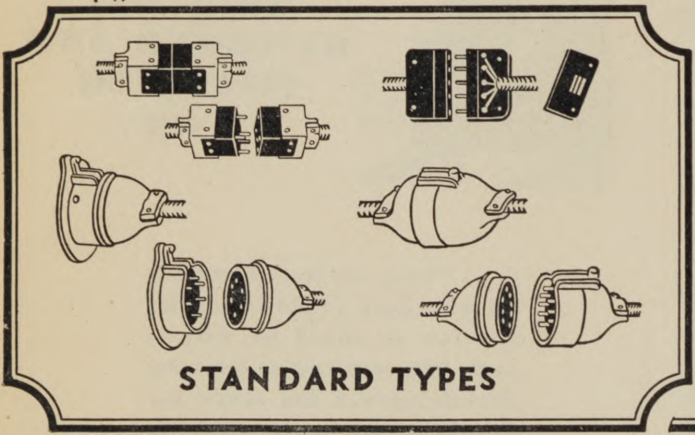
....."Yea, verily, blessed is he who hath INKIES on the set for it shall be quiet; and, blessed too is he who sitteth upon a hot stove for verily I say unto you, he shall surely rise again."

We discovered just the other day that the reason Solly was so partial to INKIES was because that other Sol (California Sunshine Special) was also silent and made much light with little fuss.

There is bottled clear light in INKIES (guaranteed 100 proof) and like sunlight it's the quiet variety. If you know a director or a camera-man anywhere who is on the verge of biting his mother-in-law, tell him to take a tip from Solly and write to Mole-Richardson. He'll get an earful!

IF IT ISN'T AN IT ISN'T AN INKIE

MOLE-RICHARDSON, INC.
Studio Lighting Equipment
941 N. SYCAMORE AVENUE HOLLYWOOD, CALIFORNIA



KLIEGL CONNECTORS for Sound Recording Apparatus

PIN-PLUG connectors, especially designed for quickly connecting electrical circuits of sound recording devices, telephone and signaling systems—to the sound-proof camera booth, the monitor room and other locations about the studio . . . numerous designs meeting innumerable requirements . . . various current capacities . . . different combinations for multiple and branch-off circuits . . . any number of poles desired . . . substantial, serviceable, practical . . . just what you need.

Write for Bulletin No. 102

KLIEGL BROS
UNIVERSAL ELECTRIC STAGE LIGHTING CO., INC.
321 WEST 50th STREET
NEW YORK, N.Y.

STANDARD TYPES

Two French Sound Studios

ONLY two French studios are equipped with sound recording devices, according to latest word from Paris. These are the Mechen studio at Epinay, and the Gaumont studio in Paris. Plans are said to be under way to install sound equipment in several more.

Motion Pictures in the Air Now a Reality

MOTION picture shows in the skies on a regular cross-country passenger plane became a realty during the trip of a Trans-continental Air Transport plane which arrived at the Grand Central Terminal, Los Angeles, recently with a full load of passengers from Columbus, Ohio.

The pictures, on 16 millimeter film, were shown the passengers while the plane roared its way across the continent, and the program consisted of a Universal Newspaper newsreel; an Oswald the Rabbit comedy, and scenes from "Broadway," Universal's super-production now being shown in theatres all over the nation.

The showings were made through a special arrangement between the T. A. T. and Universal Pictures and proved a treat to the passengers. A 16 millimeter Duograph projector, weighing but 9 pounds and operated by dry cells, was used to show the pictures on a special daylight screen.

Universal was the first to show regular sound pictures upon a trans-Atlantic acean liner and, with the flight of the T. A. T. plane from Columbus to Los Angeles, became the first to show its product in the air on a regular scheduled passenger plane.

The picture show in the air was also a feature of the return flight of the big, three-motored plane to Columbus and judging from the success of the first venture will become a regular feature on all T. A. T. passenger planes.

Holland

The issue in Holland of four hundred and sixteen thousand shares in the Kuchemmeister International Acoustics Company has been over-subscribed about six hundred times. The Kuchenmeister system is absorbed in the Klangfilm-Tobis system.

Acoustical Control

(Continued from Page 4)

picture was in the foreground and the voice in the back. The speaker had just entered a door at the back of the set when the close-up was cut in, but the sound track used corresponded to the long shot. The result was that four out of five people who first saw it, got the illusion that the sound was coming from behind the speaker through the open door and they moved their heads to see who was in the room behind. This effect is not nearly so marked if the close-up is at the center of the screen. It is usually possible to use the same sound track for a close-up and a semi-long shot in the foreground, but almost never when the close-up is in the background.

Thus we come to a freedom of action which should be of interest to directors, artists, and writers. The artist is no longer limited to speaking within five or six feet of the microphone. The artist does not even need to know where the microphone is. It is unnecessary to talk to it or in the direction of it. You may talk with your back to it. You can put on a wildly raving scene, with the actors walking back and forth, talking at any time during the movement.

There is one other thing that has come out of this work. For some reason or other with sets which are more live—I don't know the technical explanation—it is possible to handle an apparently wider range of loudness so that if you go from a quiet dialogue suddenly into an excited dialogue, it is not necessary to yank the mixer dials around. There are two ways of controlling the loudness of the sound. With the mixer you take care of it with the technical apparatus.

There is, of course, a legitimate use of faking in a sound track when an unnatural sound is more artistic than a really natural one. Unless this is the case we have been trying to take the sound as naturally as possible. There is one other case where it seems legitimate to use dials and that is where you have two actors whose voices do not match at all in intensity. Actors of this type should not play opposite each other if they were on the stage. You can have then, one setting for the weak voice and another for the loud one. This tends to bring them into unison; but then again, you only have one setting for any given voice.

BRINGING THE ARC BACK

City Engineers Perfect Apparatus Which Greatly Aids Studios

By PAT DOWLING

SOLVING one of the greatest problems which has confronted the makers of talking motion pictures, engineers from the Los Angeles Department of Water and Power, working with the staff of the Metropolitan Sound Studios and Experts from the Cinema Studios Supply Corp., have perfected apparatus making it possible to use "hard lights" on sound sets without the humming noises which previously prohibited the use of this erstwhile standard studio lighting equipment.

The men responsible for the new development, which is said by motion picture officials to be of far reaching consequence, are J. C. Alberts, supervisor of the Test Section of the City Bureau, and A. N. Owens of the Test Section, assisted by Wallace Oettel, chief of the Electrical Department at Metropolitan.

Some time ago, E. F. Scattergood, Chief Electrical Engineer of the City, became familiar with the problem of picture producers and detailed T. A. Panter, chief of operations, to make available the facilities of the Test and Research Section of the department. The problem was the elimination of the high-pitched whistle given off by the high-intensity carbon arc lamps which were being generally used in the motion picture studios. Since the advent of talking pictures, these lights could not be used on sound sets, and it had been considered necessary to throw into the discard many millions of dollars worth of this expensive equipment. A further difficulty was the fact that the producers have not been satisfied with the photography obtained from the exclusive use of incandescent lights, which have been used as a substitute on sound stages, and also that the latter type of lighting caused terrific heat, which made working conditions very difficult.

After many months of research, tests, and experimentation, a silencing device has been evolved which is so successful that it will be installed in all the studios in Hollywood as fast as it can be produced in quantity. The device is a low-impedence filter connected in shunt with the generator, affording a very low impedence pass for the higher harmonics, and consists principally of an electrolytic condenser of very high capacity. By its use arc lights are once more available for cinematography, increasing the light tone range, and giving the cinematographer a much wider latitude. At the Metropolitan Studio, where the experiments were conducted, these silent arcs are in general use. Among the companies now using this equipment on the Metropolitan stages are Sono-Art Productions, on whose "Blaze o' Glory," set were recently counted ten 24-inch sun arcs and over a dozen 100-Amp. spots of the old 'hard' type; Howard Hughes' "Hell's Angels;" and the companies making the Christie Talking Plays for Paramount. This actual use has proven that the problem has been definitely solved, and that the so-called "hard lighting" equipment may be used without the humming noises which formerly were picked up by the sensitive recording microphones.

Charles Christie, at whose studio the experiments were conducted, stated, "The local studios have all been experimenting for months in an effort to solve this difficult problem for their talking pictures. That the new method is of invaluable aid to the producers is indicated in the fact that it will mean salvaging an enormous amount of valuable lighting equipment and motor generators, and will mean the production of technically better talking pictures. The engineers of the City Department are to be heartily congratulated for their untiring efforts in this achievement. The simplicity of their apparatus makes it possible to apply it to any generator at comparatively low cost, and it accomplishes the desired results without impairing the efficiency or capacity of the generators. The city officials and engineers working under them are deserving the highest praise for this piece of service to the local industry."

Mr. E. F. Scattergood, Chief Electrical Engineer of the Municipal Bureau of Power and Light, stated, "We are gratified with the results. This cooperation of the engineers of this department with the Technicians of the Motion Picture Industry is in accord with the fundamental policies of the Department, one of which is encouragement of industrial expansion in Los Angeles by bringing new, and by assisting in more economical production by existing concerns.

"Any industry or group in our midst is therefore entitled to all our research facilities, and any problems of the Motion Picture Industry, one of the dominant industries of the nation, and surely one of the most progressive, would have received every effort of our research department even if the producers had not had an able staff of Technicians to work with us on this problem."

In a short time, it is announced, a public demonstration of this filter will be given, at which time the technical details and construction will be published.

Concerning Cinematography

(Continued from Page 5)

for myself, I prefer expertly photographed black-and-white to any of the color work so far available. It is more perfect, and less distracting. But there is no doubt a demand for colored films arising, a demand which will become universal when the technicians develop a really perfect color process; one that will show real people instead of pale, waxy dummies. Mr. Milner tells me that this will come when they work out what he calls a three-color process: I hope that one is developed soon, for it seems that they are forcing the growth of this demand for color, and if there aren't improvements technically, I think that the future of color will be unpleasantly dull.

And the future of talking pictures? Of course I'm an optimist! They are certainly here to stay, and, in spite of what everyone was saying a year ago, picture people are going to stay with them. Just think, now, of the greatest talkies of the last few months: *The Broadway Melody, In Old Arizona, Hollywood Revue, Coquette, Bulldog Drummond, Alibi, Thunderbolt, The Lady Lies,* and any others you might name—every one made by a silent-picture director; and where are the big ones made by your stage directors? Yes, the silent-picture-trained directors are going to be the ones who make this new medium the great thing it is going to be. And the new directors of the future are going to come from the picture-trained people, too, and as usual many of the best of these will be men from behind the cameras. For, whether you are making pictures silent or talking, you are still making pictures, and to make pictures you must first of all know how to see drama through the eye of a camera!

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DeVinna Returning

OUT of the wilds of the African jungle via a little portable wireless set, has come the news that Clyde DeVinna, A. S. C., and the motion picture party sent there by M-G-M are now enroute home to Hollywood.

The party has been in Africa since last spring filming "Trader Horn." DeVinna, head cinematographer, took a portable wireless set with him, and for several months tried in vain to break through the ether and establish direct contact so his party could get all the home news. When it seemed as though he was doomed to fail he suddenly made contact with a station in New York. Since then he has contacted several other stations and has been sending and receiving messages daily.

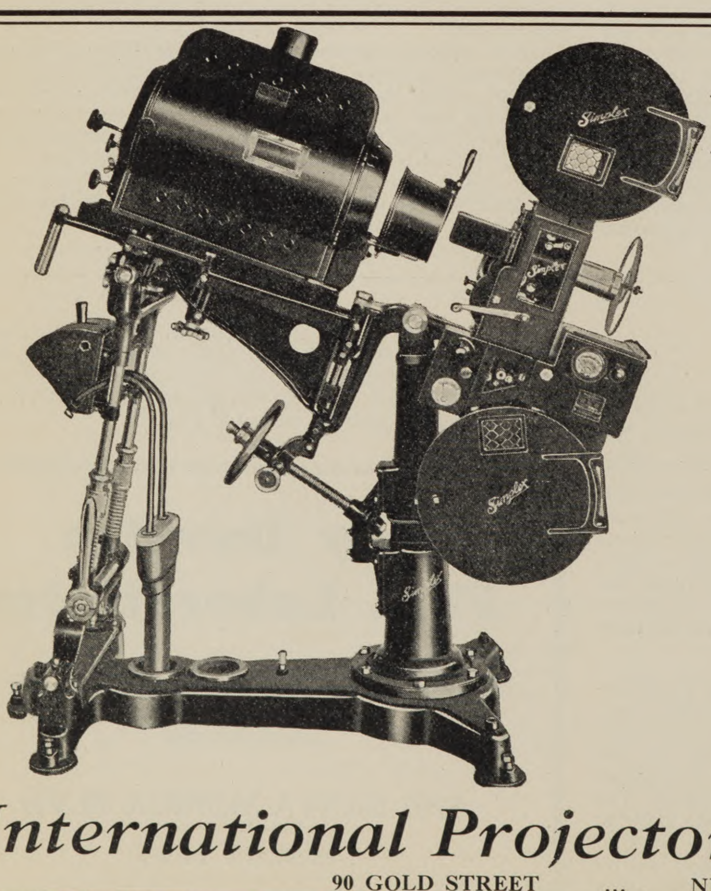
The outcome of each world-series game flashed through the skies to the ears of DeVinna down in the jungle, and while lions were roaring in the surrounding wilds DeVinna was telling Director Van Dyke and the entire party about the collapse of the Chicago Cubs. And cheers of the ball fans drowned out the noises of the jungle night.

Then to DeVinna's lonely wife in Hollywood came the most joyful news—"Sailing for home November first"—So the party is on the way home and due to arrive here in early December.

When DeVinna arrives we expect to give the readers of the Cinematographer a wonderful story of adventure from his pen. As an example of what to expect, in our letter from him he told of how they cornered a vast horde of crocodiles in a dam. Then they had to stand guard at night to keep the "crocs" from breaking down the barriers. On one occasion DeVinna pumped a hail of 22-calibre bullets into an advancing "croc," but it kept on coming and when DeVinna's life was in danger another member of the party saved the day by firing a bullet from a high-powered rifle into the huge beast.

Have You Back Numbers?

If any subscriber has back numbers of the Cinematographer that he wishes to sell will he kindly communicate with the editor. The following numbers are wanted: Vol. 6—Nos. 4, 5, 6, 7, 8, 9. Vol. 8—Nos. 8, 9, 10, 11. Vol. 9—Nos. 4 and 7.



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The first issue (September, 1929) will carry the following material—

- **Recent Developments in Sound Recording and Reproduction** *by Joseph Riley*
- **Television Developments** *by M. L. Muhleman*
- **Design of Complete Amplifier System for Sound Pictures . ** *by C. H. W. Nason*
- **Speech Interpretation in Auditoriums** *by E. C. Wente*
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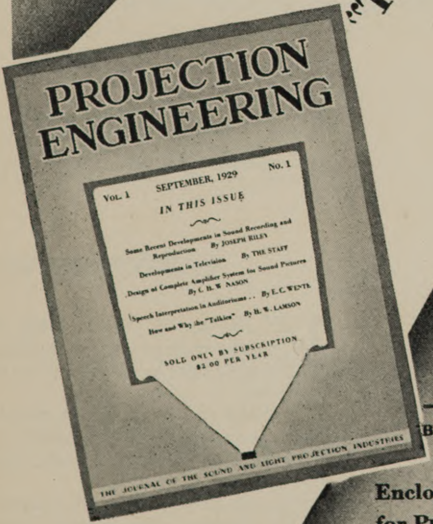

PROJECTION ENGINEERING

VOL. 1 SEPTEMBER, 1929 No. 1

IN THIS ISSUE

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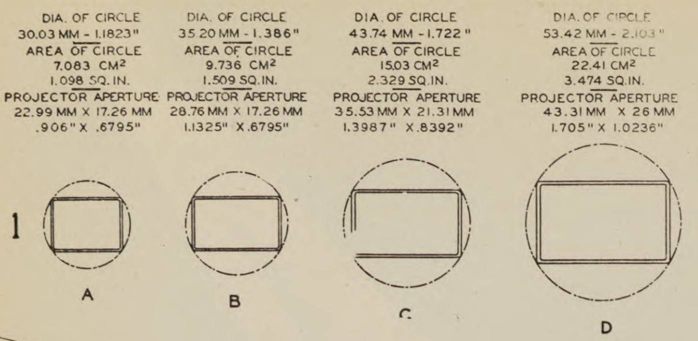

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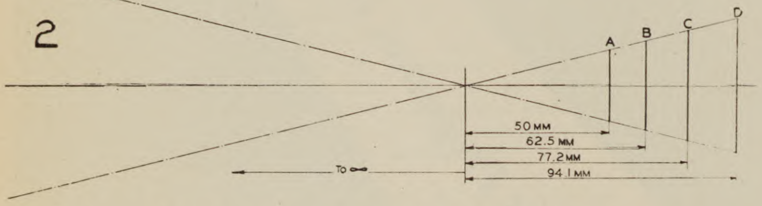

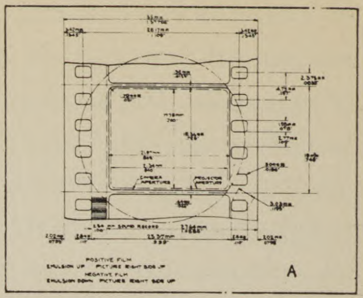
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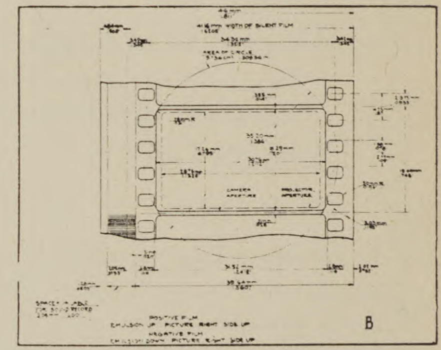
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Some Practical Aspects and Recommendations on Wide Film Standards

An Abstract of paper, by J. A. Dubray and A. S. Howell, read at Fall meeting of the S. M. P. E.

THE paper is divided into three parts. The first dealth with the artistic and psychological effects of the rectangular shape in pictorial representation and their relation to Motion Picture projection, culminating with the assertion that the demand for a change in the proportions of the screen is not a mere desire to give the public a "bigger show," as has been stated at times, but is one of the most striking and significant steps in the progressive evolution of the Motion Picture Art.

In the second part of the paper the authors, after giving warning of the necessity of co-ordination of efforts within all branches of the Industry for the reaching of a decision in the establishment of a new Standard, present three dimensional proposals, which they call the "Economic," the "Spectacular" and the "Extreme."

The height of the "Economic" is equal to the sum of the pitch of four standard perforations, that of the "Spectacular" is equal to the pitch of five and that of the "Extreme" is equal to the sum of six standard perforations.

In the three proposed dimensions the sides of the rectangle are in the ratio of three to five.

The "Economic" is so called because its adoption would i volve a minimum of time and capital expenditure for the alter tions and new developments necessary in the apparatus used the Motion Picture Industry.

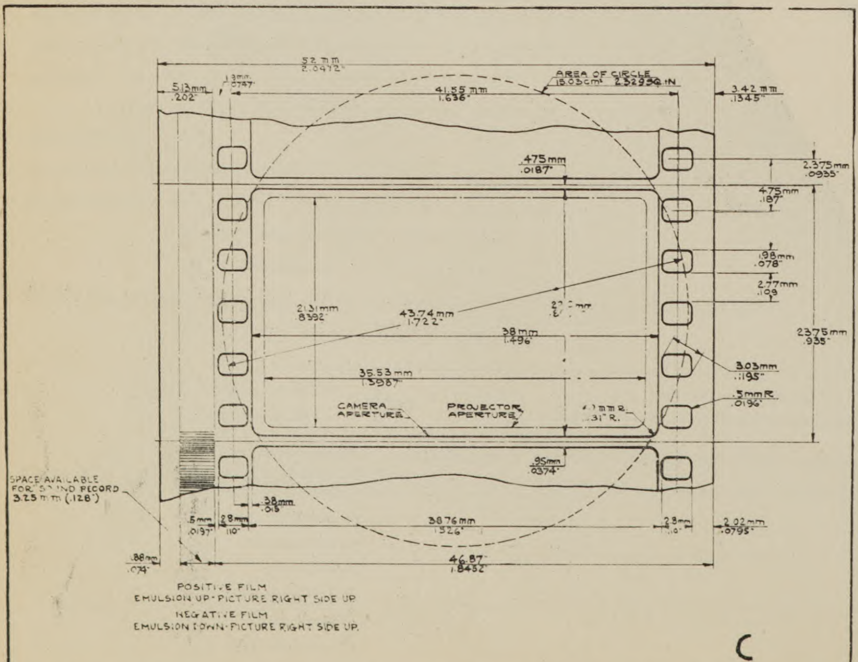
The "Spectacular" is so called because it presents greater poss bilities than the "Economic" in refinement of execution and b cause it lends itself to a more spectacular presentation of pictur The cost involved in its development would be far greater th that involved in the development of the "Economic."

The "Extreme" is so termed because its adoption would i volve extreme expenditure of time and capital in its developme and because it would present extreme and perhaps excessive abu in exploitation.

In the three dimensions, the position of the sound record outside the film perforations.

The dimensions and pitch of the perforations are recommend to be maintained as per the standards in use with the 35 mm. film

The rectangular perforation with rounded corners is recom mended for both negative and positive films.



Illustrations: Upper left, (1) area of aberratic (2) Schematic drawing showing focal lengt standard 50 m. m. lens. Upper center, prop standard. Upper right, the "Economic" proposal. Lower right, dimensions for the

ROOS NOW ASS

LEN ROOS, A. S. C., who recentl points, has joined with Ralph Fe wood, and from now on will de apparatus.

Fear has nearly perfected a new soun has been at work independently on a ne ideas will be pooled and they promis field shortly.

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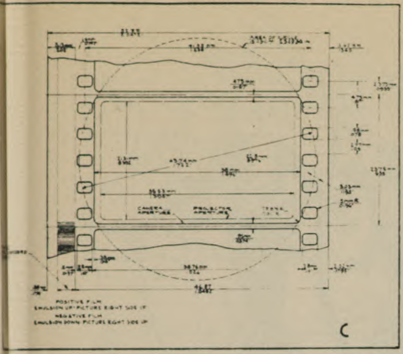
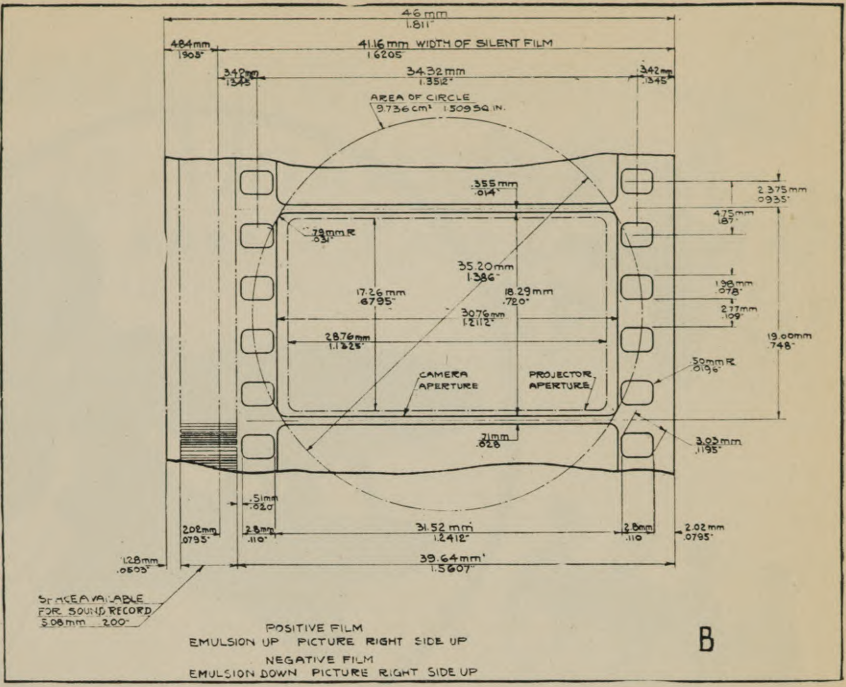
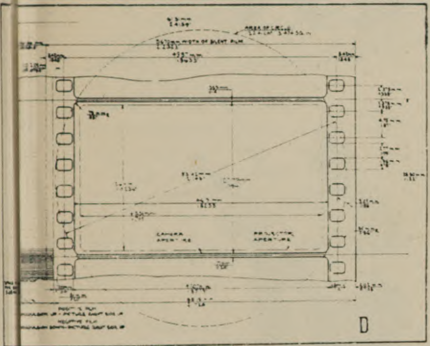
"In joining with the Fear organizati business connection. Mr. Fear is an ab to startle the industry with our sound







The problems pertaining to the photographic and projection optical systems are briefly surveyed.

A comparison between the photographic lenses which would be used for wide films and those used in today's talking pictures practice, shows that the wide films would require a less extended range of focal lengths for the same stage space.

It is the belief of the authors that the adoption of any of the three proposed dimensions would not involve radical changes in the present stage of development of Motion Picture photographic objectives.

In regard to projection, the paper mentions that although a greater screen image broadens the viewing angle in regard to correct distribution of illumination, it also increases the distance of the optimum viewpoint from the screen and therefore reduces the number of seats in the front part of an auditorium from which the screen can be viewed under acceptable conditions of good visibility in regard to light distribution and picturial perspective.

Mention is made of the necessity of redesigning the condenser system of the projection apparatus and that of changing both projection lamps in order to have the cathode spot to sufficiently fill the condenser.

The authors also point out the necessity of departing from the present practice of projection lens design, and foresee the development of projection lenses of the anastigmatic type.

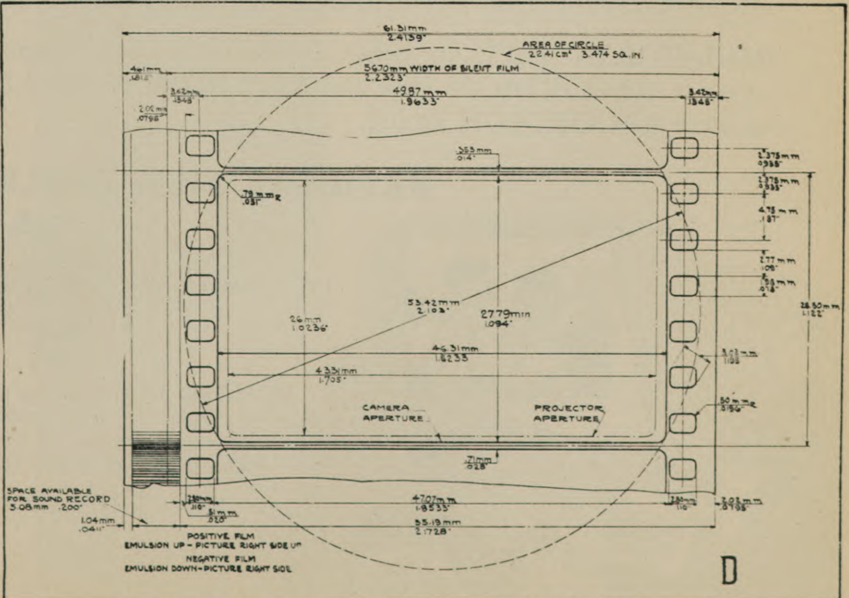
In the third part of the paper, the proposed dimensions are given in detail and the placing of the sound record outside of the perforations is recommended with a view to possible future developments in the sound recording system.

Serious consideration is given to the time, commercial and financial factors involved in a change of Standards and the necessity of devising a system of interchangeability of the projection apparatus in use today with those which will be necessitated by the new standards. Such system of interchangeability is deemed to be essential during the change-over period from one to the other standard.

It is finally proposed by the authors that the "Society of Motion Picture Engineers" form a special standing Committee, which should include representative members of all the branches of the Motion Picture Industry, as well as members of all recognized technical and business Societies within the Industry.

Such Committee should be given power and authority to discuss and take definite decisions in regard to the creation and adoption of a new Standard.

ower of photographic lenses required for wide film. red to cover the wide image width, compared with a mensions of wide films compared with the 35 m. m. ns. Lower left, dimensions for the "Spectacular" 's" proposal.



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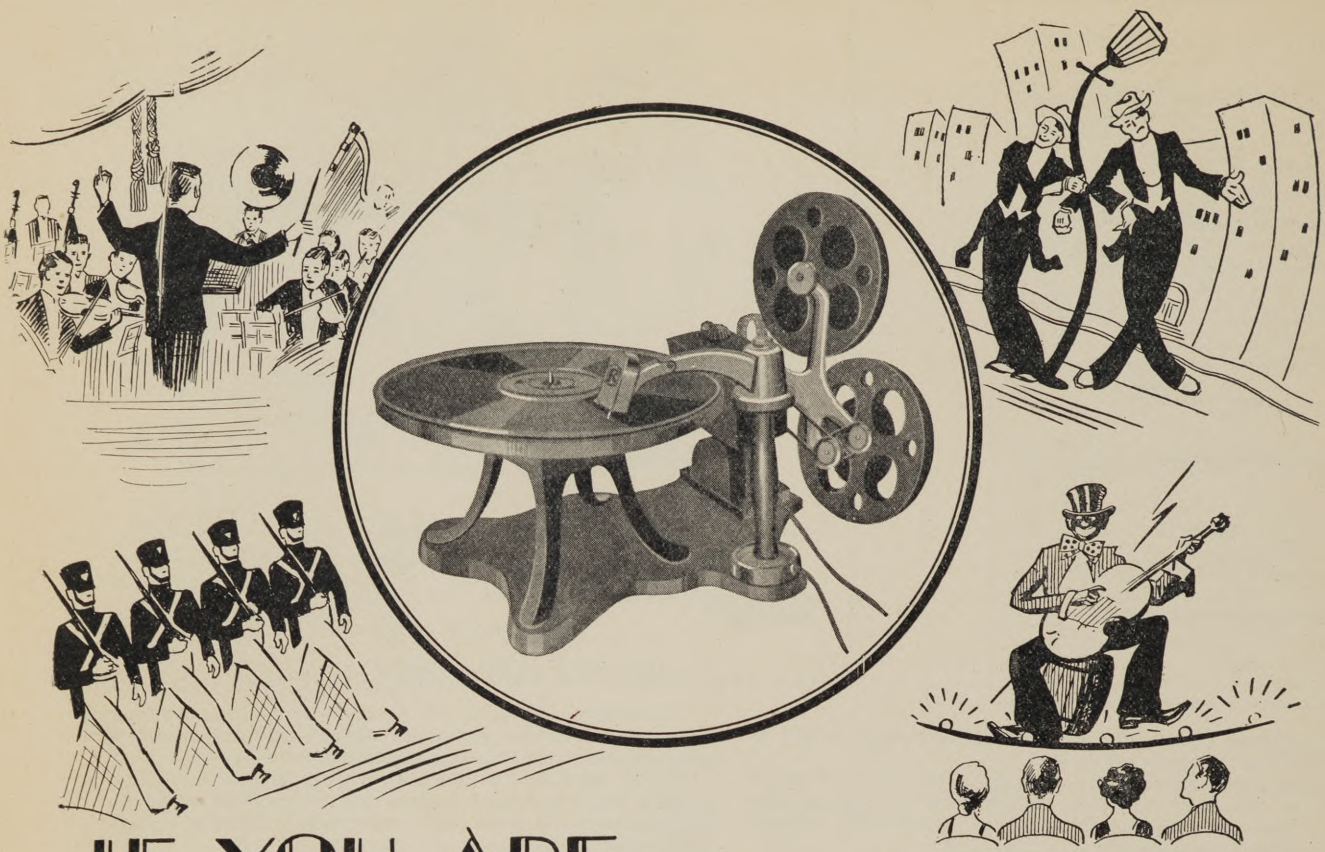
aid Roos. "I know I am making a happy nneer and I feel certain that we are going ts."



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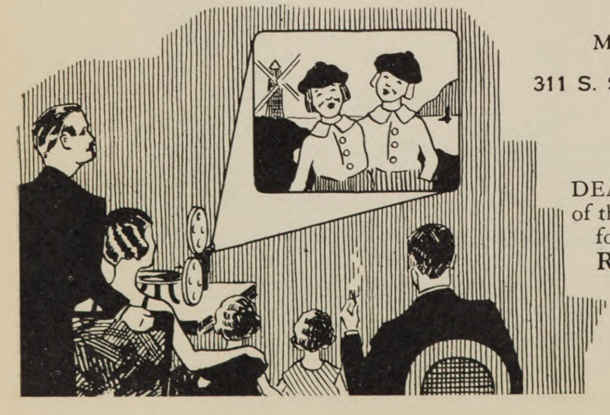

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Amateur Movie Making

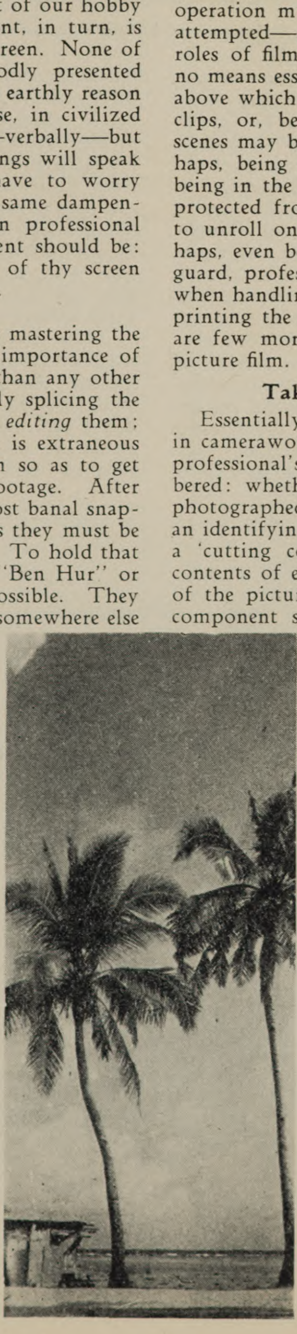
By WILLIAM STULL, A. S. C.

ALTHOUGH most of us have by this time gotten over the old-fashioned idea of photography as a purely seasonal activity, there still comes a very welcome pause along about November. While we can still find as many subjects as ever—perhaps more than ever—to invite our cameras, most vacations are over, and we've less spare time available during the daylight hours. This isn't by any means a misfortune, for it enables us to do something we might otherwise overlook: edit and title our films, and get them in really fine shape to show our friends.

After all, the greatest pleasure most of us get out of our hobby is showing our films to audiences. Their enjoyment, in turn, is governed by the quality of what they see on the screen. None of us enjoy watching an unedited, untitled, slipshodly presented picture, even if it is our own work; and there is no earthly reason for us to expect our friends to, either. Of course, in civilized countries, even our best friends won't tell us—verbally—but the efforts they'll make to dodge our future showings will speak eloquently. And, though amateur films don't have to worry about the box-office, a drop in attendance has the same dampening effect on amateur enthusiasm that it has on professional profits. Therefore, the amateur's first commandment should be: Thou shalt not show thy family or friends any of thy screen work which is not as perfect as thou canst make it.

Importance of Editing

The first step toward attaining this perfection is mastering the technique of effective editing. It ranks with the importance of mastering the camera technique, for editing, more than any other one thing, can make or mar a picture. Not merely splicing the scenes together in some sort of sequence, but really *editing* them; cutting out all imperfections; eliminating all that is extraneous and uninteresting; and, above all, arranging them so as to get the maximum effectiveness out of the minimum footage. After all, the primal purpose of all pictures—even the most banal snapshots—is to tell some kind of a story. To do this they must be able to arouse and maintain the beholder's interest. To hold that interest they must tell their story—whether it be "Ben Hur" or the Baby's bath—as compactly and effectively as possible. They cannot wander around from here to there and then somewhere else and still expect to be regarded as interesting. It is the editor's task to keep them from wandering—to keep them in the straight and narrow path of cinematic propriety. Whatever their story, they must be conceived, executed, and refined so as to tell that story with the least lost motion. Above all, they must never bore; that is the one unforgivable sin. A picture may have many faults, and still be passable, if it be not boresome; it may be otherwise magnificent, but fail if it bores. Professional films afford innumerable instances of this: every cinema goer can recall plenty of pictures in which weak stories were made interesting by the editorial treatment, and where potentially great ones were ruined by unimaginative cutting. Hollywood is full of tales of films made or unmade in the cutting-room.



Amateur films are no less susceptible to the influences of editing. Many an amateur library is discarded just because its owner did not know, or care, about the importance of proper editing, while some there are which, though intrinsically ordinary, have been made outstandingly interesting just by clever editing. Thus, as the amateur is usually his own general factotum, editing should take a place of importance on a par with camerawork, and it can be fully as great an opportunity for individual artistic expression as cinematography. Indeed, the individual character of many of the foreign productions that reach our shores is in a great measure traceable to their highly individual styles of editing: the British films, for instance, stressing the atmospheric background, almost to the injury of the plot; M. Dreyer's amazing use of intercut closeups and angle-shots in "Joan of Arc;" and the bewildering use of short cuts—flashes—in the Russian films, which, above all, are masterly examples of artistic cutting.

The actual apparatus required is simple. The most important accessories are a pair of rewinds—preferably double, so that the film may be wound in either direction—a splicing outfit—whose operation must be thoroughly mastered before serious editing is attempted—and a rack in which to place the individual small roles of film. A very convenient accessory, but one which is by no means essential, is a large hamper, lined with a cloth bag, and above which is a rack along which are disposed a number of film clips, or, better, small, wire hooks, from which a number of scenes may be hung, for quick reference—a whole sequence, perhaps, being grouped on one or two hooks. The trailing ends being in the bag (which should be kept perfectly clean) they are protected from dust and dirt. The film should never be allowed to unroll on the floor; it is too likely to collect dirt, and, perhaps, even be trod on and bady damaged. As an additional safeguard, professional film-editors always wear light, cotton gloves when handling film. It keeps the hands clean, and prevents fingerprinting the film; and, barring perhaps, the police records, there are few more unpleasant places for fingerprints than a motion picture film.

Taking a Leaf from the Professional's Book

Essentially, the *modus operandi* of cutting is not difficult. As in camerawork, the amateur can well take a few leaves from the professional's book. In the first places the scenes should be numbered: whether there be, as in a dramatic production, numbers photographed on the film, or no, the scenes should each be given an identifying number. These numbers should be catalogued, and a 'cutting continuity' prepared, giving a definite idea of the contents of each scene, and its place in the primary arrangement of the picture. Then the film should be broken down into its component scenes, each scene being made into a separate roll, and a numbered slip of paper attached. All similar scenes should be grouped together. When all this has been done, the picture should be roughly re-assembled, the scenes being merely clipped together with paper-clips. Then this assembled film should be inspected, and all imperfections, such as bad frames, partly fogged scenes, N. G.'d ones, etc., cut out, and the remainder spliced together. The picture can then be projected, and is ready for the real business of editing. This consists of eliminating artistic imperfections as the mechanical ones were removed: re-arranging the scenes to their best advantage, cutting in others that may be needed, and clipping off non-essential footage of all kinds, from a single frame to a sequence.

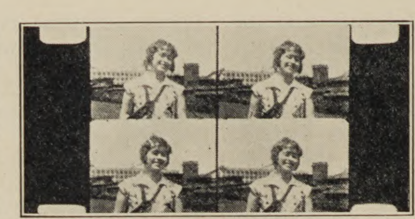
Editing for Emotional Effect

Editing has also an important bearing on the *tempo* of a picture. It can accelerate a lagging tempo, and tone down a too rapid one. If, for instance, certain scenes in a sequence requiring rapid movement seem to drag, they can often be speeded up by judicious trimming—cutting them so short that only the vital action of the scene is left; cutting exits as soon as the action of the scene is left; cutting exits as soon as the actor begins to leave the picture, and entrances when he is well into it. Most important in such sequences is the use of many closely intercut 'flashes,' for this is one of the simplest and most effective methods of building up a fast emotional

(Continued on Page 44)

REVOLUTIONARY TYPE AMATEUR CAMERA SOON TO APPEAR

Producing Company Claims New Camera and Projector Will Reduce Cost 75%.



A shot made with the new camera

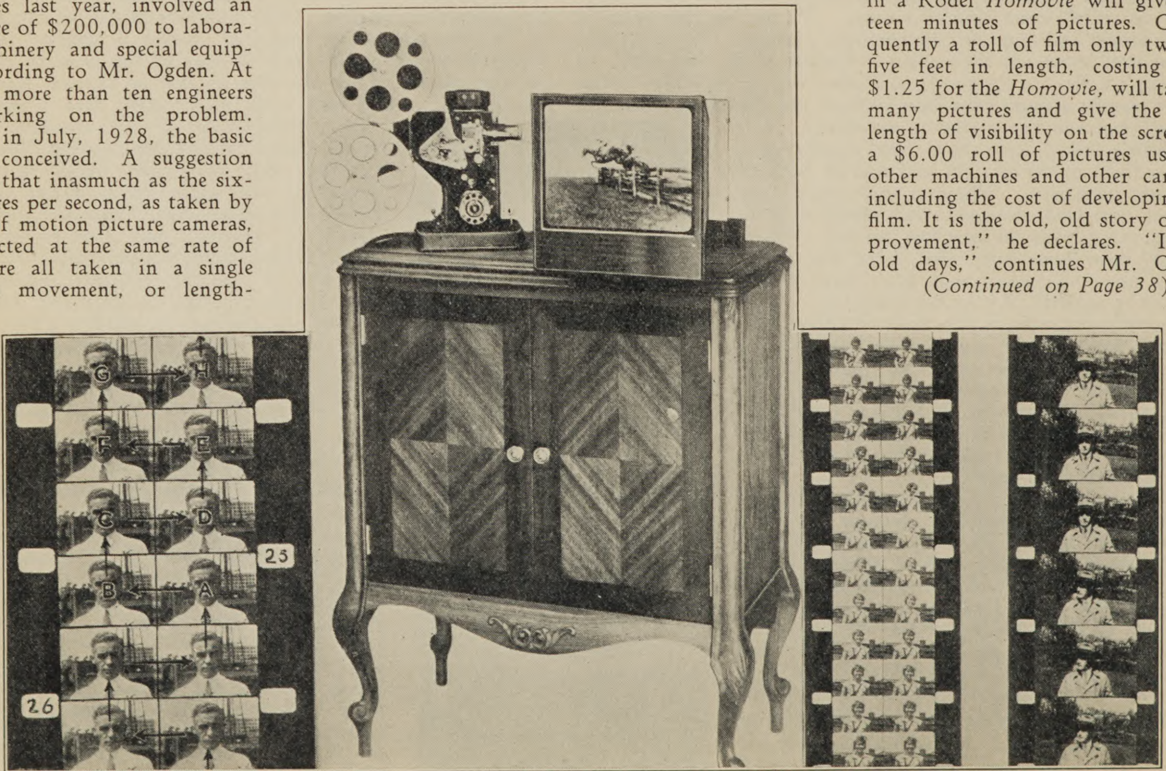
THROUGH an invention which enables motion pictures to be taken laterally as well as horizontally upon the same film, the cost of motion pictures for the home has been reduced seventy-five per cent, it is claimed, bringing home motion pictures within the reach of the great mass of people. A family in almost any circumstances, it is claimed, may take motion pictures of the daily events that revolve around the family group and preserve an active, animated record of life at a cost that is far less than the ordinary "still" pictures. The announcement of this forward step in home entertainment, to take its place along with radio and the automobile, was made by Clarence E. Ogden, President of the Kodel Electric & Manufacturing Company, pioneer radio manufacturer of Cincinnati. It is the result of the realization that radio, which became the fastest selling piece of merchandise in history early in its inception, even in the days of crystal sets, has pointed the way to home entertainment. Today, according to Ogden, home entertainment is changing the aspect of American home life, bringing entertainment, music, drama, religion, political viewpoint, etc., into the home. Realizing that the public welcomed any form of home entertainment and appreciating the fact that motion pictures, together with "talkie" devices would enable any home to keep a permanent, everlasting record of the history of the family, to pass down from generation to generation, provided the cost of operating a home motion picture camera could be reduced, Ogden, with outstanding motion picture engineers, started work more than three years ago to develop a new motion picture principle of operation.

This principle, perfected in Kodel laboratories last year, involved an expenditure of $200,000 to laboratory, machinery and special equipment, according to Mr. Ogden. At one time more than ten engineers were working on the problem. However, in July, 1928, the basic idea was conceived. A suggestion was made that inasmuch as the sixteen pictures per second, as taken by all types of motion picture cameras, and projected at the same rate of speed, were all taken in a single horizontal movement, or lengthwise of the camera, this automatically handicapped the reduction in cost of operation because the cost of the film is determined by length, having a fixed width of 16 millimeters. Therefore, it was decided, if pictures could be taken crosswise as well, it would enable the operator to take four pictures where formerly only one picture was taken, in the same amount of space, or four vision impressions where only one impression had been taken before.

The new camera is known as the *Homovie* and a projector which can project pictures taken by the *Homovie* Camera as well as pictures taken by any other type of 16 millimeter camera, is known by the same name. Registration of this trade-mark has already been allowed by the U. S. Patent Office, according to Ogden, as well as each of the 48 individual states. The necessary mechanism for accomplishing this increased efficiency of the camera and reducing the cost of operation seventy-five per cent is exceedingly simple. The two movements, moving the film across the front of the camera as well as horizontal, alternate with each other, so that the composite movement of the film and shutter mechanism produces a series of individual pictures arranged upon the film.

"The advantages of the *Homovie* Camera over all other motion picture cameras, in addition to decreasing the cost of operation, include the elimination of frequent reloading, at the end of short periods of time," says Mr. Ogden. "A roll of 16 millimeter film, such as is used in other motion picture cameras for home use, costs $6.00 and is 100 ft. in length, with a projection or motion picture visibility on the screen of only four minutes. The identical reel of film in a Kodel *Homovie* will give sixteen minutes of pictures. Consequently a roll of film only twenty-five feet in length, costing only $1.25 for the *Homovie*, will take as many pictures and give the same length of visibility on the screen as a $6.00 roll of pictures used in other machines and other cameras, including the cost of developing the film. It is the old, old story of improvement," he declares. "In the old days," continues Mr. Ogden,

(*Continued on Page 38*)



Left is principle of the new camera. Right shows difference between new method and old. Center is the new projector in operation

INFORMATION FOR AMATEURS

Amateurs—Send your problems to this department and we will solve them

Q. Can I use Magnesium flares, 20,000 cp., under a low roof; also, how do I ignite it? M. V.—Arthursburg, N. Y.

A. Magnesium flares cannot be used under low roofs; though in case of extreme necessity one might be placed at a very low level. As a rule, however, they should only be used where there is ample room, for they generate an intense heat. They are usually provided with a regular fuse by which they may be lighted.

Q. Will you explain the phrase, "—reversing the old idea of a light over the subject's shoulder to get third dimension effect," which occurs on Page 39 of the October AMERICAN CINEMATOGRAPHER? W. L. P.—Detroit, Mich.

A. This phrase presumably refers to Griffith's having instituted the now accepted practice of back-lighting his actors, and also to the practice of frequently lighting the background of a set very strongly, a practice which also contributed greatly to the separation of the planes.

Q. I have a great deal of film made with the now-extinct Movette camera, which took film about 17mm wide. Is there any way I can have this converted or reprinted for use with standard 16mm apparatus? J. D. J., Villanova, Pa.

A. Yes, we are informed that Albert Teitel, of 105 W. 40th St., New York makes a specialty of reprinting all such off-standard film to standard stock.

Q. Must one use a special filter with Eastman's 16mm Panchromatic film, or will one of the regular Wratten K series do?—E. L. P.—Rockford, Ill.

A. We believe the regular cine-kodak filter the Eastman Co. supplies is developed from the Wratten series, which are, themselves, perfectly satisfactory. For outdoor use, K2 is best; with arcs, K1½ ; while under incandescent lights no filter at all is required.

Q. Is it necessary to correct exposure for increased altitudes?—C. S. F., Jr.—Seattle, Wash.

A. Yes. A good rule to follow is to give normal exposures below the 4,000 foot level; from there to around 5,000 feet three-fourths normal; and from 5,000 to well over 6,000, half normal; and so on. Exposures must be further reduced if snow, or large bodies of water figure in the picture to any great extent, and still more yet if immediately after a rain or snowstorm, when the air is unusually free from dust. We recommend Panchromatic film and filters for all high-altitude cinematography, and, as the light conditions are more than usually deceptive, the use of some exposure meter like the 'Cinephot.'

Bell & Howell's Filmo 70-D

A few words about this Company's new camera from the paper read by J. A. Dubray at the recent S. M. P. E. meeting.

A NEW 16 mm. camera, known as the "FILMO model 70-D," has been presented to the amateur field by the Bell & Howell Company. This camera is of the spring motor type, having a capacity of 100 feet of film, and each winding of the motor permits to uninterruptedly expose 25 feet of film.

Equipped with an integral turret head, the camera is capable of holding three lenses of different focal lengths, and a newly designed viewfinder, permitting a rapid change of masks which determine the field of view covered by any one of six lenses of focal lengths varying from 1 inch to 6 inches.

The mechanism of the camera is described, and stress is laid upon the features of the speed regulating governor, which is of an entirely new design and instantaneous in its action. The governor permits to operate the camera at speeds varying from a minimum of eight to a maximum of 64 pictures per second, including all intermediate speeds.

A device has been incorporated in this camera which, together with the governor, insures a positive start of the mechanism at any desired speed and an equally positive stop at all speeds, without sacrificing the feature of the camera stopping with the shutter in its position of occultation, and without the slightest acceleration or deceleration being visible on the exposed film.

This FREE BOOK [Shows HOW to make

PERFECT Indoor Movies

Here is the only book of its kind ever written—and just the book you have been hoping some one would write. Shows by pictures and diagrams exactly how to illuminate all kinds of interior sets and obtain perfect results. Placement of lamps for different effects—light intensity and exposure with respect to distance of lamp from subject—back lighting—elimination of shadows—every phase of artificial lighting for amateur movies is made clear in this wonderful new book.

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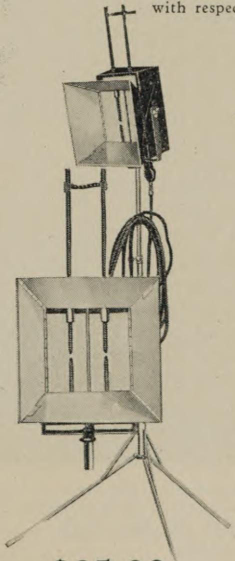
tells all about LITTLE SUNNY TWIN

and shows why this 15-ampere, 110-volt, semi-automatic, twin carbon arc makes perfect indoor movies at f:35 when other lamps fail.

Little Sunny Twin is the favorite with amateurs and professionals everywhere. Strongly made, light in weight. It can be taken anywhere and used on any AC or DC house circuit without special fuses or wiring. And think! Only $25.00 complete with folding stand, long cord and six carbons. Sent on 10-day trial with guarantee of immediate refund if not satisfied.



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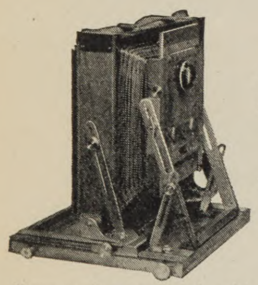

Showmo Camera fitted with 6" focus lens.
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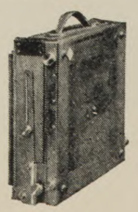

Closed

OF INTEREST TO AMATEURS

Goerz Mount for Filmo D

THE C. P. Goerz American Optical advises us that the temporary difficulty in fitting their Cine lenses to the new Filmo D Turret model has been overcome and that the users of the Filmo D can have their cameras supplied with any of the well-known Goerz Lenses.

The present mounts require slight alterations only to make them fit the Filmo D, except that it has become necessary to design an entirely new mount for the popular 15mm. wide angle Hypar. This mount is now in the course of manufacture and will be available in a short time.

Ingenious Editing Device

THE manufacturers of the well-known Ensign cine equipment have just announced an unusually handy device for editing 16mm. film. The device consists of a multiple rewind, enabling one to simultaneously inspect both the negative and positive films of a scene, side by side, and cut them together. The two films travel over an illuminated inspection-box, beside which is a conveniently-located splicer. The whole forms a most compact and convenient means of editing amateur films, especially where negative film is used instead of the reversal type.

A Remarkable Cinegraph

OWNERS of home projection machines now have the opportunity of seeing in their own living rooms the struggles and adventures of that brave band of scientists who in 1924 set out to conquer Mt. Everest.

Two lives were lost amid the ice and snow and the party suffered untold hardship. Now, according to announcement by Eastman, a 400-foot cinegraph of the ascent is ready for home movie lovers. A remarkable addition to the cine library.

A Tip

A piece of adhesive cloth, on which the title of the picture has been printed, will, if stuck on the metal reel of a processed film, enable you to identify the reel at a glance.

Going Abroad?

ARE you going to take your 16mm. camera abroad? If you are, the following advice will prove of benefit:

If you register your 16mm. motion picture film with the customs office at the point of embarking, they may avoid paying duty upon this film when it is brought back, exposed.

A tariff amendment is, at the time of writing, being considered which, if passed, will admit amateur moving picture film duty free. But until the existing regulations are amended, it is best to use the registration plan.

Using f.4.5 Long-Focus Lens

THE following excerpt from Cine-Kodak News is reprinted for the benefit of amateurs desiring to use the f.4.5 long-focus lens which is available for use with the Cine-Kodak Model B, f.1.9, the Cine-Kodak Model BB, f.1.9, or the Cine-Kodak Model A.f.1.9. This lens enables one to obtain close-up views of distant objects, and of outdoor sports, animals, birds and subjects that cannot be easily approached.

"It is anything but difficult to use a long-focus lens. There are, however, a few rules which should be followed to assure the best results. These rules are briefly reviewed here.

"Always use a tripod or some other solid support for the camera when using the long-focus lens. This eliminates camera movement which, in the case of the long-focus lens, is magnified tremendously on the screen.

"When in doubt about the exposure to use for long-focus shots, keep the exposure on the short side, but do not try to under- or over-expose.

"Judge or measure your distances as accurately as possible. Properly focused long-focus shots are clean-cut and beautiful on the screen; out-of-focus shots are blurred and unattractive.

"The best movies of distant scenes are made on clear days. On slightly hazy days, Panchronomatic Film and a color filter will give results when ordinary film would fail.

"Remember to keep the lens element of the long-focus lens clean at all times."

For Christmas, give a subscription to the American Cinematographer

SIMPLE LENS FACTS

A Little Light on Lenses for the Amateur Movie Makers

By H. SYRIL DUSENBERY

THERE are certain basic facts and optical laws governing the camera lens that every movie maker should know. Lack of proper understanding of these simple lens facts makes intelligent picture taking unnecessarily difficult. There are but two adjustments to make on most amateur cameras before taking a picture. One determines the size of the lens opening or aperture, as it is called. This controls the amount of light that reaches the sensitive film, that is the exposure. The other adjustment is the distance setting or focus. This controls the distinctness of the image on the film. Both of these may be considered as lens adjustments. It is, therefore, essential that every movie maker should have a thorough understanding of this most vital part of the camera.

Every lens has a definite *focal length*. Focus the lens on any distance object so as to obtain a distinct image of that object on a white screen back of the lens. The distance from the lens to this image is the *focal length*. The focal length of the standard lens ordinarily supplied with a 16 mm camera is one inch. This simply means that the film is exactly one inch behind the optical center of the lens when a distant object is in sharp focus. It is important to understand this because the *size* of the image depends directly on the focal length of the lens. This is illustrated in figure 1. Here "f" represents the focal length of the lenses. It is quite obvious from the diagram that the longer the focal length f the larger the image. Naturally, when the image is large, less of it can be recorded on the film. In other words, the field of view gets smaller as the objects themselves are larger. Telephoto lenses are long focus lenses. Their field of view is narrow and the image large. Wide angle lenses are short focus lenses.

It is a well known fact that the brightness or intensity of a particular light on a given surface depends upon how far away that surface is from the source of the light. To illuminate an object brightly, experience has taught us to approach the source of the light as closely as possible. We know that the brightness diminishes rapidly as we move away from the source of light. Therefore, if we have two lenses of similar size and construction so as to enable them both to pass exactly the same amount of light, the brighter image will be formed by the lens with the shorter focal length. Naturally, the further away the film is from the lens, (all other things being equal), the lens brilliant the image. To put matters the other way around, in order to have an image of definite brightness, the longer the focal length of the lens, the more light it must pass, hence the larger its diameter. This fundamental fact should be understood before we proceed further.

In photography, we are primarily concerned with the brightness of the image that falls on the sensitive film as this governs the exposure. We have just seen that this depends upon two things:

1. The focal length of the lens.
2. The diameter of the opening (aperture) of the lens.

In order to express what is popularly called the *speed* of a lens, that is the actual brightness of the image on the film, we must take both of these factors into consideration. This is done in a scheme of lens markings known as the "f" system. To determine the particular f number of a lens, we simply divide the focal length of that lens by its effective aperture, thus:

$$f = \frac{\text{Focal length}}{\text{Diameter of effective aperture}}$$

Assuming the shutter speed of the camera to be constant, we find that the exposure is directly dependent on the diameter of the effective aperture since, for any given lens, the focal length is a fixed constant. We control the aperture by a device known as the iris riaphragm. The f numbers engraved on the ring controlling the diaphragm thus express the intensity of the light that will be delivered to the focal plane. As this f number is a ratio, no matter how large a lens may appear or how long its focal length may be, any lens set at a particular f number will pass exactly the same amount of light to the focal plane as any other lens set exactly the same f number, assuming that the optical efficiencies of the lenses to be the same. This fact is often misunderstood. It means that no matter what the *maximum speed* (largest opening) of a lens may be, when it is set at some particular number, f.8 for example, it is no faster or slower than any other lens set at f.8. In figure 2 we have endeavored to show this fact. Here we have sketched two lenses, one has the maximum speed of f.3.5 and the other f.1.9. Both diaphragms, indicated by D, are set at the same f number. Hence, as the diagram shows, both pass the same amount of light. The only reason that the f.1.9 lens is called faster than the f.3.5 lens is because it is capable of being opened up more, thus allowing more light to pass thru, when the occasion arises. At similar f settings, they have similar speeds.

To complete our discussion of lens facts, we must mention one more thing. That is *depth of focus*. For a definite setting on the focusing scale, we find that, as far as the human eye can tell, objects somewhat nearer and also objects considerably further from the camera, than the principal object focused on, are in sharp focus. This distance, from the nearest object in focus to the furthest object, is called *depth of focus*. Without going into a mathematical discussion of just what constitutes sharp focus, we have attempted to illustrate graphically in figure 3 that the smaller the lens opening, the greater the depth of focus. In this diagram F represents the depth of focus. As we close down the lens opening, or diaphragm, the rays of light come closer together forming a narrower cone. With the lens wide open, F is reduced to a mere point. As the lens is stopped down, the distance between the near point in focus and the far points is seen to increase. In practice, this means that if we desire objects in the foreground, as well as those in the background to be in good focus, we must use the smallest lens opening possible that will admit sufficient light to enable the film to record the image.

The theory of lenses is a highly technical subject. This brief discussion has not attempted to go into the matter beyond stating a few simple facts that every movie maker should understand. It is hoped that these lens facts will enable the movie maker to handle his camera more intelligently and thus improve his screen results.

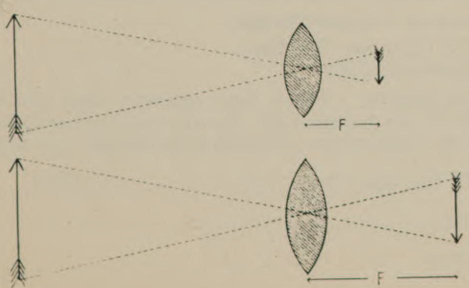

Fig 1

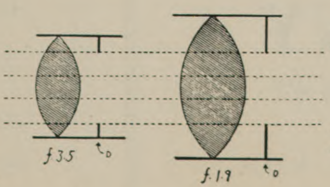

FIG 2

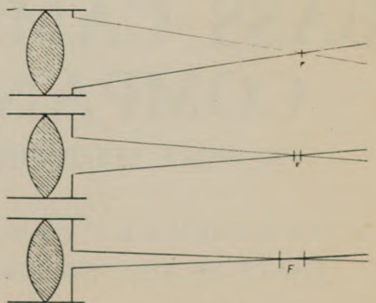

FIG 3

Simple diagram on Lens facts

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Obtainable at all Dealers
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Eastman Kodak Stores
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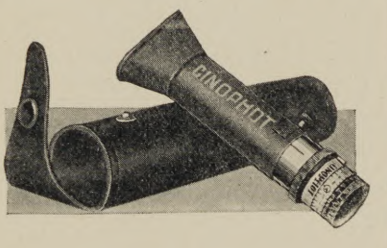

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Movie Equipment

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HEADQUARTERS FOR
AMATEURS AND PROFESSIONALS

New Kodacolor Stations

THE number of Kodacolor finishing stations in foreign countries is rapidly increasing. Since the last list was published the following stations have been equipped to process Kodacolor:

Brussels: Kodak, Limited, Rue Neuve 88.
Rio de Janeiro: Kodak Brasileira, Ltd., Rua Sao Pedro 270.
Manila: Kodak Philippines, Ltd., Calle David 181.
Osaka, Japan: Cine-Kodak Service Japan, Inc., 1 Dojima Bldg.
Shanghai: Eastman Kodak Co., 24 Yuen Ming Yuen Road.
Lausanne: Kodak Societe Anonyme, Avenue Jean-Jacques Mercier 13.

Kodacolor is also being processed at Cine-Kodak Service, 422 East 10th Street, Kansas City, Mo.

Pan Film for Autumn

THE amateur movie maker who hopes to get the best gradations of tone, and therefore the best screen results, in his autumn movies will do well to use Panchromatic Film. This is because ordinary film cannot reproduce, in black and white, the colorful foliage or billowy clouds anywhere near as effectively as "Pan."

A color filter is recommended for use with "Pan" although excellent movies may be made without it. However, the filter should not be used for portraiture.

New Finishing Station

MOVIE makers living in the south-central part of the country will be glad to know that their Cine-Kodak and Kodacolor films may now be sent for processing to Cine-Kodak Service, 422 East 10th Street, Kansas City, Mo.

ENERGIZE YOUR FILM !

Use *Kleena-fylm Process*

It cleans, rejuvenates, restores and maintains pliability in old film. A non-inflammable fluid easy to apply. Clearer projection. Guaranteed.

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AMATEURS

Keep Step with the Professionals by Reading The Technical Cinematic Magazine of the Motion Picture Industry.

THE AMERICAN
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Published in Hollywood by the American Society of Cinematographers, the leading professional cameramen of the world.

You cannot afford to be without it.
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Gentlemen: Please find enclosed three dollars ($4.00 for foreign rate) for one year's subscription to the AMERICAN CINEMATOGRAPHER, to begin with the issue of .... 1929.

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NEW SYNCHRONIZING APPARATUS FOR 16MM. WITH DISC RECORDS

ONE of the most interesting papers presented at the recent Fall meeting of the Society of Motion Picture Engineers, in Toronto, was given by Wm. Bristol, head of the Wm. H. Bristol Talking Picture Corporation. This paper dealt with a new synchronizing apparatus for 16 mm. films with disc records.

Mr. Bristol had his new device with him and gave a practical demonstration that was really amazing. His pictures were thrown more than thirty feet feet onto the screen and the voice reproduction was so natural one could close his eyes and imagine the speaker was standing on the platform talking, despite the poor acoustic properties of the room.

Some unusual things have been done by the Bristol Engineers in making this new Home Talkie device, and Mr. Bristol declares he will not stop until he has a perfect machine for the home at a price all can afford to pay.

His own explanation follows in part:

"In the operation of motion-picture projectors, where the film is synchronized with sound recorded on a disc or on a film, the standard speed of the projector is 90 feet per minute or 24 frames per second.

"It will be understood that the sound record, whether on a disc or on a film, must be reproduced at the same speed it was originally recorded, and in order to use the standard theatrical, synchronized film, whether of original width or whether reduced to 16 mm. width, it will be necessary to project the pictures at this standard speed of 24 frames per second.

"Professional projectors are always operated in booths for fire protection, which at the same time prevents the audience from being disturbed by the noice of the machine. All projectors, whether made for 35 mm. or for 16 mm. films, when operated in the open without a booth at the standard 24 frames per second, make so much noise that it is practically impossible to reproduce synchronized sound pictures satisfactorily. Projectors for amateur use are designed primarily to be operated at 16 frames per second. At this speed, it would usually be impossible to synchronize theatrical records, as they would only be running at two-thirds of the normal speed at which they were recorded.

To overcome the difficulties of operating these projectors, at the abnormally high speed that would be necessary to maintain synchronism and give correct reproduction of the sound, we have found, by experiment, that we can remove every third frame from the synchronized film, thus reducing it to two -thirds of its original number of frames and when projected at two-thirds the speed at which it was originally recorded, perfect synchronism will be maintained between the shortened film and the original sound record.

Although by this plan we have eliminated every third picture, we have found that, due to persistency of vision, it does not detract from the natural action of the picture.

By a specially designed printing machine, we are able to make prints from the original theatrical negatives, either of the standard width of the 16 mm. width, with every third frame eliminated. Such prints can then be used in either 35 mm. projectors of 16mm. projectors at the reduced speed of 16 frames per second, still producing results equally as good as though the picture had been originally taken at 16 frames per second. When projecting these shortened films, it is necessary to use a shutter designed for the projection of 16 pictures per second in order to reduce flicker to a minimum.

The complete outfit for reproducting these special synchronized 16 mm. or any other 16 mm. film, consists of a turntable unit connected electrically by a small cable of any convenient length to the 16 mm. projector, using the special synchronizers described in a paper presented at the meeting of the Society of Motion Picture Engineers, September, 1928.

We have developed a method of using the same type of synchronizing motors which were previously described, but now made up into smaller models, especially for non-theatrical, industrial and educational uses, so that the synchronizers can be used to replace the motors that are usually employed in 16mm. projectors. For illustration, in the 16 mm. Bell & Howell projector, we have been able to substitute for the motor which is usually supplied, one of these synchronizers. There is no other change in the projector, since the gearing at the turntable is made to give the correct speed ratios. The cord shown is a cable leading to a companion synchronizing motor, which is shown at the right-hand end on the base of the turntable which is now being projected.

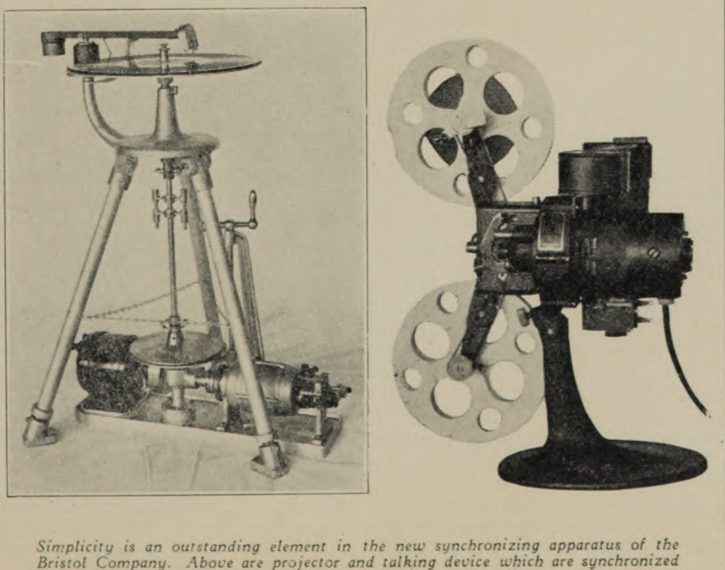
The electric motor which is shown on the left-hand side of the base, through a worm and gear located in the center of the base, rotates the turntable through the vertical shaft at 33 1/3 revolutions per minute. The motor, in addition to driving the turnable, also turns the motor of the synchronizing motor on the base, which generates the current to drive the synchronizing motor which has been shown as a part of the projector.

In order to make the synchronizing motor small enough to replace the original motor in the Bell & Howell projector, it is necessary that this motor should run at high speed, but such a high speed is undesirable at the turntable, as it may make noise and cause vibration, interfering with the perfect reproduction of the sound.

We have always made the synchronizers so that one drives the other at the same speed as has been previously described, but in this case the turntable synchronizer is made to drive the projector synchronizer at twice its own speed.

This is accomplished by making a four-pole synchronizer at the turntable and a two-pole synchronizer for the projector. The field of the turntable synchronizer is mounted on trunnion bearings, so that it may be rotated independently of the rotor of the turntable synchronizer. The rotation of this field on its trunnion bearings in a direction the same as the rotor is turning will cause a decrease in the speed of the projector, while the rotation of this field in the opposite direction to that of the rotor will increase the speed of the projector without in any way affecting the speed of the turntable or the quality of the reproduction.

A handle may be used for revolving the field of the synchronizing motor in its trunnion bearings through a pair of gears. By means of this, perfect synchronization may always be maintained with-



Simplicity is an outstanding element in the new synchronizing apparatus of the Bristol Company. Above are projector and talking device which are synchronized

(Continued on Page 36)

PROFESSIONAL AMATEURS

Hal Mohr, A. S. C., Gets Pleasure and Profit from His Cine-Kodak

—By Wm. Stull, A. S. C.

Hal Mohr, professional amateur, instructs Director Paul Fejos in the art of making movies with a Cine-Kodak, on the Universal lot

WHEREVER motion pictures are shown, American cinematography is recognized as the world's finest. Even the most rabid critic of things American is forced to admit that the men behind Hollywood's cameras are, truly, "the cameramasters of the world", for in no other land is the standard of cinematic artistry so uniformly high. Yet notwithstanding this, there are few bodies of artists of equal rank who receive so comparatively little individual recognition. Probably this is due to the peculiar nature of cinematic art, which to be successful, must needs be unobtrusive; the best-photographed picture being the one whose scenes are in themselves beautiful, but which fit so perfectly into the story that they are only subconsciously noticed.

In such an art, particularly in a community where such high artistic standards prevail, the individuals who succeed in both satisfying the strict canons of their art and also stamping their work with a definite, individual style, must be rare indeed, yet in Hollywood there are disproportionately many who have succeeded in doing so. One of these men is Hal Mohr, A.S.C., who has in the past few years placed to his credit such brilliant examples of cinematic artistry as *Noah's Ark, Broadway, Shanghai Lady*, and is now adding to his laurels with *La Marseillaise*. No one who has seen any of these pictures can forget the superb and distinctive photography which featured them, for Hal Mohr is truly the Rembrandt of the silversheet. Like the great Dutch painter's, his work is a combination of idealism and realism, blended with masterly technique. Small wonder, then, at the place he has made for himself as one of Hollywood's leading Directors of Photography.

But Hal Mohr does not confine his cinematographic activities to his work of bringing Universal's super-productions to the screen; quite the contrary, for off the set he is one of the industry's most enthusiastic cine-amateurs. He owns one of the most complete cine-kodak outfits in Hollywood, and uses it just as he does his big Mitchell. It is perhaps, too, one of the hardest-worked outfits, for in almost everything he does, his camera takes part. Like all other amateurs, he films his friends, and the numberless intimate incidents that make personal films interesting. Besides, he films his travels, for he is an inveterate globe-trotter. The most recent excursion was to the romantic south seas, where he and his charming wife vacationed after the completion of *Broadway*. From this trip he brought home more than 4000 feet of film, both black-and-white and Kodacolor, of every phase of the trip.

The voyage took him across the Pacific to Pango-Pango, then to Suva, and from there into the virgin bush. After having seen, and filmed, all the routine sights the Fiji Islands offer casual tourists, Mohr and his wife chartered a native launch, and struck out for themselves, away from the beaten paths. Finally they found a native village so far removed from the haunts of tourists that the inhabitants had not laid eyes on a white man for over four years, and had never seen Americans. There they stayed for several weeks, living among these happy- childlike people, sharing their simple life, and filming a fascinating record of their joys and sorrows, of their work and play.

Among the many unusual incidents which Mr. Mohr's camera captured during this time was a fish-drive. The local chief, he says, had been away on a long journey—fully thirty miles—and the village was preparing a great feast against his return. As the whole life of the village was for the community, the entire population repaired to the beach, laughing, singing, and playing games, to await the right stage of the tide for their method of catching fish. When the time was right, they piled into their canoes, and paddled joyously to the outer reef which encircled the island. At this stage of the tide, the reef was under some three or four feet of water. Into this the men leaped, forming a great circle along a big, fibre cable, with the net at one end of the ring. When all were in their places, the circle, with much shouting, singing, and beating upon the water, slowly closed toward the net, driving the fishes before them as hunters in our western states drive jackrabbits. As the circle closed, the excited rhythm of the chants increased; the spell of the hunt became overpowering, until finally Mohr himself was overcome with it, and, laying aside his camera. leaped to join the shouting natives. But—true cameraman that he is—before he leaped he had recorded the whole chase in Kodacolor!

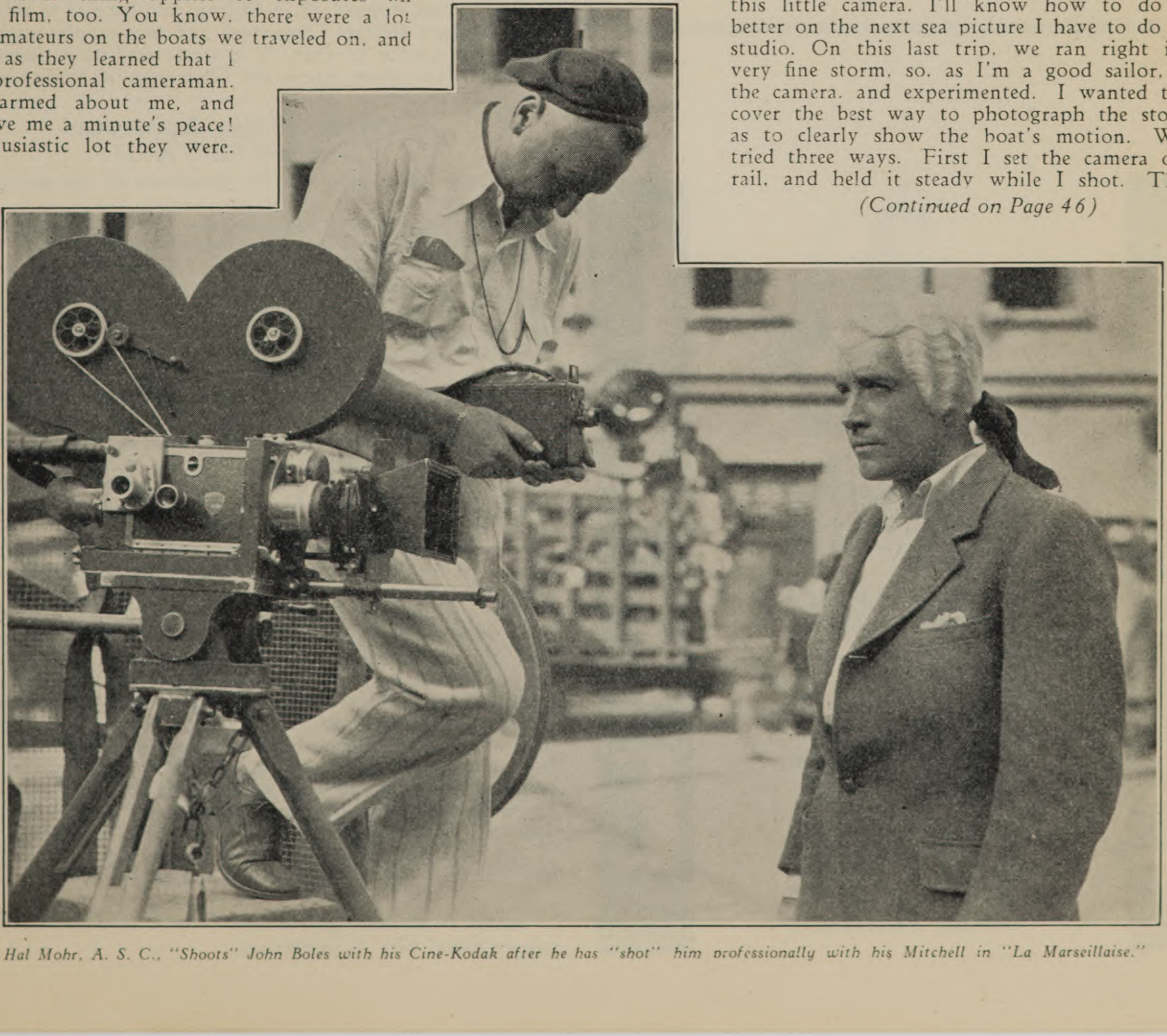
"I learned a good deal," he says, "about tropical cinematography on this trip; especially about color-work under these unusual conditions. You see, I wasn't able to get any of my film developed for more than two months after I exposed it. Even under the best conditions that doesn't help the film—but in the tropics it pretty nearly ruins it. However, I sealed up the cans as well as I could, and most of the films came through all right. That is, except the color stuff! The manufacturers say that that should be developed as soon as possible after exposure—and I'm here to tell you that they're right! A lot of mine was spoiled just because of that delay in developing, and, in spite of all the special care the factory experts took, it came out practically clear celluloid. The way we explained it was this: in this particular emulsion, the action of the light on the silver particles is progressive—the chemical change doesn't altogether stop when the light is removed, but slowly continues. During the time that had to elapse before my films could be developed, this action went so far that ultimately there was no unaffected silver left to be transformed into a positive image by the reversal process, and thus there was left little more than clear celluloid. I found, on the other hand, that a number of scenes which I had thought were hopelessly underexposed, had by this same action so built themselves up that they were just about right. There's an idea for Kodacolor users; if you have had to underexpose scenes badly, wait a few weeks before sending them to the finishing station, and they may build themselves up to a contrast that if not perfect, will, at least, be an improvement. On the other hand, if you're in the position I was, months away from the nearest Kodacolor laboratory, deliberately underexpose, and let the film take care of itself. However, I can't recommend this to people who aren't fairly well experienced in Kodacolor work, so that they can be sure of themselves in regulating the exposure! For general use, though, I can't add anything to the makers' instructions, except: don't doubt 'em: These factory engineers have worked out the proper exposures and so on, and marked them down plainly enough so anyone can understand them—if he only will.

"The same thing applies to exposures on ordinary film, too. You know, there were a lot of cine amateurs on the boats we traveled on, and as soon as they learned that I was a professional cameraman, they swarmed about me, and never gave me a minute's peace! An enthusiastic lot they were, too! They asked me all sorts of questions—but the funny part of it was that they didn't really need my help on the point they asked most about; exposure. All amateur cameras have their exposure-guides marked plainly on them, usually right by the lens, and all I could add to them was a careful explanation of just what the various light-conditions mentioned meant. Beyond that, I had to tell them that they had all the necessary information right in their hands, if they'd only use it. The manufacturers have worked it all out so completely that, coupled with the extraordinary latitude of amateur film, one can hardly go wrong if he will only keep the instructions in mind.

"Personally, I've been amazed at the things I could do with my little outfit. I use it just the way I do my big Mitchell, but I find I can get away with things I'd never dare to do with studio equipment. And I've learned a lot with the thing. For instance, since using my cine-kodak I've learned more about making hand-camera shots, such as we use a deVry or Eyemo for in the studio, than I'd have thought possible. All sorts of little things, you know, like how to study yourself, pamming, and so on. For instance, in using the camera without a tripod, as we often must, I've found that the steadiest position is with the feet well apart, the camera at eye-level, and the breath held. That little matter of holding the breath is the big thing, for when you're not breathing, you are ever so much steadier. That goes double for pams; and, another thing, most of the amateurs I've met always pam 'way too fast. It must look awful on the screen. If they'd only think about that while they're shooting, it would save them a lot of film. If anything, they'd be better off to pam slower than what they thing is too slow. It might possibly make the scene drag a bit—but at least you could see what it was all about! By the same token, they might make their scenes a good deal longer without hurting anything. As long as a man has the price of a pair of scissors, he might as well shoot his scenes long enough to be understandable on the screen: then, if he finds them too long, he can cut them down. But how in the world can he expect to stretch out scenes which are too short?

"Yes, aside from the pleasure I've gotten out of my camera, I've gotten a good deal of profit, as well, for I can use it to do a lot of experimenting that I'd never be able to do with my big one. For instance, just because I own this little camera, I'll know how to do a lot better on the next sea picture I have to do at the studio. On this last trip, we ran right into a very fine storm, so, as I'm a good sailor, I got the camera, and experimented. I wanted to discover the best way to photograph the storm so as to clearly show the boat's motion. Well, I tried three ways. First I set the camera on the rail, and held it steady while I shot. Then, I

(Continued on Page 46)



Hal Mohr, A. S. C., "Shoots" John Boles with his Cine-Kodak after he has "shot" him professionally with his Mitchell in "La Marseillaise."

GOERZ

CINE LENSES

Goerz Cine Lenses are being used all over the World because they are of

Superior Quality

We manufacture in our New York factory the

Kino—Hypar F. 2.7 and F. 3

in focal lengths from 1-inch to 4-inch

We also have an imported, superspeed series

Cinegor F. 2 and F. 2.5

in focal lengths from 1⅜-inch to 4-inch and the telephoto series

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in focal lengths from 4⅛-inch to 13½ inch for long distance shots and close-ups

We make all kinds of trick devices, precision focusing mounts, focusing microscopes and special camera fittings.

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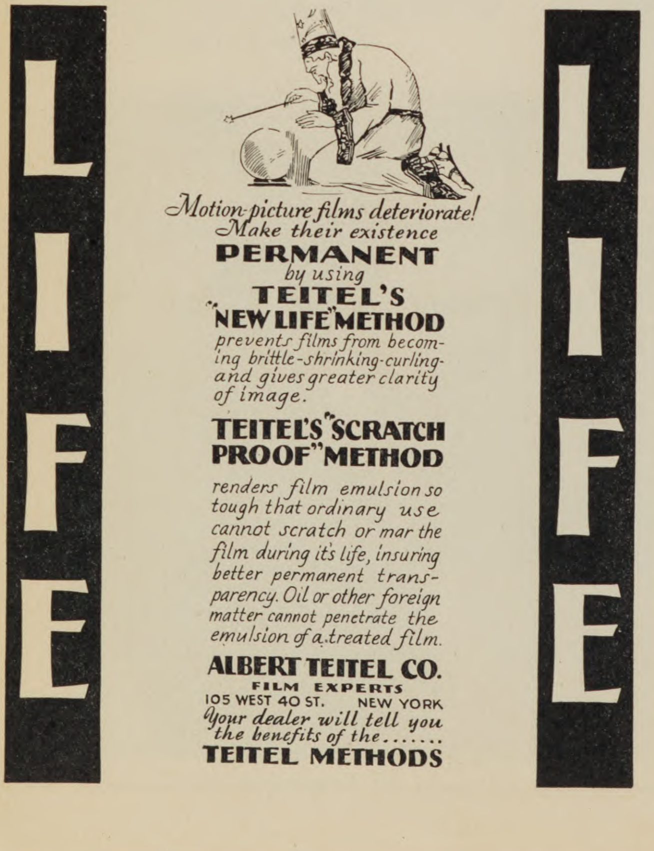

LIFE

Motion-picture films deteriorate!
Make their existence
PERMANENT
by using
TEITEL'S
"NEW LIFE" METHOD
prevents films from becoming brittle-shrinking-curling-and gives greater clarity of image.

TEITEL'S "SCRATCH PROOF" METHOD
renders film emulsion so tough that ordinary use cannot scratch or mar the film during its life, insuring better permanent transparency. Oil or other foreign matter cannot penetrate the emulsion of a treated film.

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LIFE

DREM All Over the World

September 30, 1929.

Drem Products Corp.,
152 W. 42 Street,
New York City.

Gentlemen:

We wish to advise you that we have found the Cinophot extremely valuable when used with our motion picture cameras.

As exposure is the only factor left to individual judgment, we find the use of the Cinophot renders motion picture photography fully automatic.

We are, therefore, strongly recommending the Cinophot to all our dealers and recommending it in our literature. We have instructed our sales force accordingly and hope to see each owner of one of our cameras supplied with one of these exposure meters.

Very truly yours,
Q. R. S.—DEVRY CORPORATION.
(*Signed*) GEORGE H. BLISS,
Vice-President

New Lighting Book for Amateurs

LEONARD WESTPHALEN, of Chicago, is furnishing home movie makers a valuable service in his new book on interior movie lighting, and the advice of the editor of this magazine is for every owner of a 16 mm. camera to write Mr. Westphalen for a copy of this book.

This little book explains the little secrets of lighting that are so baffling to the amateurs, and it will be mailed free to anyone asking for it. Mr. Westphalen, maker of the little Sunny Twin Lamps, knows lighting and no amateur can afford to be without his book.—H. H.

Recordion in Chicago

BURTON HOLMES LABORATORIES will be the mecca for Chicago home-talkie lovers from now on, for the distribution for the National Film Publicity Corporation's Recordion, home talkie machine, is now in their hands for the Chicago district.

This writer stopped off in Chicago and listened to this machine at the Burton Holmes Laboratory and was simply amazed at the marvelous quality of tone. It is a safe prediction that there will be many Recordions given for Christmas, if quality is desired.

Synchronizing Apparatus

(Continued from Page 33)

out in any way disturbing the projection of the picture on the screen.

It is of the utmost importance that the turntable be absolutely free of vibration in order to obtain perfect reproduction, especially of music. To accomplish this, we have developed a mechanical filter system which has proven very simple and efficient. It consists of mounting the turntable on a tripod, which stands on the floor independent of the base carrying the motors. A vertical shaft connecting the motor base with the turntable is provided with several flexible metal disc joints, designed particularly to filter out the vibration that would otherwise be transmitted to the turntable from the motor base.

In addition to these flexible discs, there is also a double sliding joint. This double sliding joint, working in conjunction with the flexible filter discs, has proven to be a most practical way of eliminating vibration, which would ordinarily be transmitted from the motor.

In conclusion I would like to call your attention to some of the advantages we think are to be gained by the use of these shortened synchronized films.

First, the noise of the projector is kept down to a satisfactory level without using a sound-proof cover, thus not interfering with the accompanying sound reproduction; second, the wear and tear is reduced on both the projectors and films, which means longer life for both; third, by using the film of reduced length, there will be an appreciable saving in the cost of the prints, handling, storage and transportation; fourth, this slow speed allows for increased length of the running time; fifth, the small space occupied by the equipment and the simplicity of its construction makes it easy to operate and desirable for homes, class-rooms, churches, clubs, lodges, etc.; sixth, the ease with which the outfit can be packed, transported and set up makes it portable and practical for demonstration and commercial purposes.

Give a subscription to the American Cinematographer for Christmas.

Your Makeup Problems

By MAX FACTOR

[*Internationally Known Authority on Makeup*]

Dear Mr. Factor:—I am sixteen and my parentts object to my using make-up. I know several girls of my age who use make-up and really you would hardly know it. I am sure if you will tell me how to do it, my parents will not object when they see how much it improves me—I am a medium brunette, brown hair—dark eyes, which sometimes look almost hazel, and my skin is not fair. Appreciatingly yours,

MAUDE S.,
Dayton, Ohio.

Answer:—It is my suggestion if you wish to win the approval of your parents, that you use make-up very sparingly. Before purchasing any make-up find out the condition of your skin—whether dry or oily, so that you may be able to get the preparations best suited, as make-up must be durable and natural, otherwise it defeats its own purpose. The proper shades for your type are: Natural powder, Medium Lip Rouge and Raspberry Dry Rouge.

Dear Mr. Factor:—I am giving a play for my church and there are three characters in it. I play the heavy—a man about thirty. A boy of eighteen with dark eyes and hair plays the hero, while the heroine, for contrast, is a blonde. My own make-up and the hero's I can manage quite well, thanks to your previous suggestions, but while I know the girl's general type, I am puzzled on how to make up her eyes—they bulge—really it is a pity, as otherwise she would be very pretty. Will you please advise me how to overcome this defect? Thanking you for your many past courtesies, I am,

Sincerely yours,
CHARLES MCA.,
St. Paul, Minn.

Answer:—Bulging eyes are successfully concealed by shadowing the upper lid with a dark purple lining color and high-lighting the center with a contrasting shade of the lining color. The high-light is applied over the shadow in the center of the lids. For the lower lid, draw a line as close as you can to the lash line with an eyebrow pencil and smudge it well into the complexion, blending the edges of the line, which gives a dark shadow, setting the eyes back.

Dear Mr. Factor:—There has always been a doubt in my mind on the correct way of applying eyeshadow. I am a brunette. What shade should I wear, and is it appropriate for daytime. Thanking you very kindly for your reply, I am,

L. B.,
Redondo Beach, Calif.

Answer:—Apply a thin film of Eyeshadow to the eyelids with your finger tips, using a light outward motion, blending it carefully upward and outward toward the eyebrows and the outer edges of the lids. No decided line should be visible. For a brunette, a soft shade of brown should be used. It is appropriate for day and evening wear.

Dear Mr. Fostor:—I have a receding chin, otherwise the contour of my face is not so bad. Will you please tell me how I can overcome this defect. I know how to use your wonderful Make-up, already having "found my type," so to speak.

Sincerely yours,
GRACE B.,
Mount Vernon, N. Y.

Answer:—To offset this effect it is necessary to use a powder

(*Continued on Page 39*)

ONE YEAR AGO

Panchromatic Make-up was but a new idea. Its purpose was clear, but it needed the element of time to thoroughly test its merits.

AND TODAY

MAX FACTOR'S PANCHROMATIC MAKE-UP is used in all the large Studios of America and Great Britain. Its fame has spread to every corner of the world.

It has withstood successfully every test. The finest Cinematographers have acclaimed Panchromatic Make-up as an important aid in producing better photography.

Today Panchromatic Make-up is far past its experimental stage. It is an acknowledged necessity, in the production of finer pictures.

Panchromatic Make-Up is manufactured exclusively by its creator—Max Factor. All others are substitutes and imitations.

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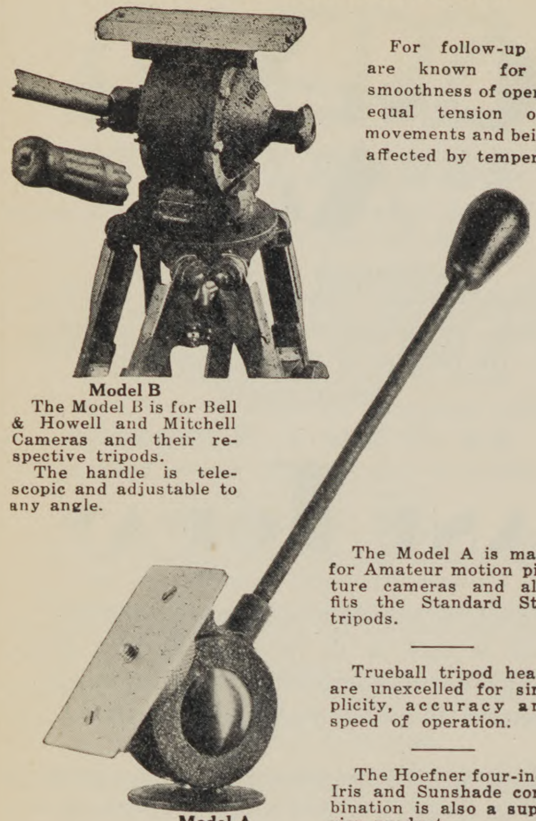
TRUEBALL TRIPOD HEADS



For follow-up **shots** are known **for their** **smoothness of operation, equal tension on all movements and being unaffected by temperature.**

Model B
The Model B is for Bell & Howell and Mitchell Cameras and their respective tripods.
The handle is telescopic and adjustable to any angle.

The Model A is made for Amateur motion picture cameras and also fits the Standard Still tripods.

Trueball tripod heads are unexcelled for simplicity, accuracy and speed of operation.

The Hoefner four-inch Iris and Sunshade combination is also a superior product.

Model A

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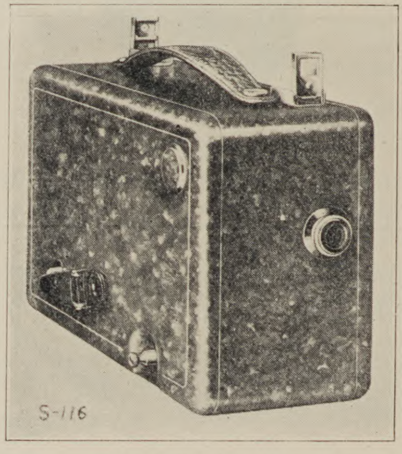
ASTRO-GESELLSCHAFT BERLIN
ON SALE BY
MITCHELL CAMERA CORPORATION
6025 SANTA MONICA BOULEVARD
LOS ANGELES CALIF.

New Type Camera

(Continued from Page 28)

"the automobile tire was considered good if it ran five thousand miles, although it cost more than the automobile tire of today that gives from thirty to fifty thousand miles of service."

This new development, according to Mr. Ogden, also heralds the showing of motion pictures in broad daylight. By the creation of what is known as a Day-Lite Recreator, the picture is projected against a mirror at an angle of forty-five degrees, which in turn is shielded from light and reflects the picture through a translucent glass screen, reproducing the picture in all the fine detail in daylight, without necessitating the darkening of the room. "This," says Mr. Ogden, "is a revolutionary achievement which may have a far-reaching effect upon the showing of motion pictures in theatres. One may be able to enter a theatre where windows permit light to enter, and still enjoy the picture as much as though the theatre were darkened.



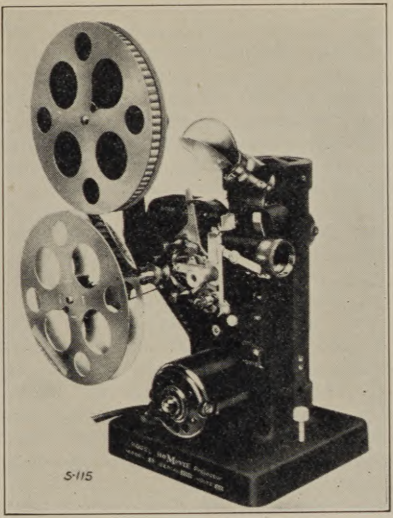
Here is the new camera

"Motion picture and camera enthusiasts who have witnessed private showings of the Kodel *Homovie*, as long as six months ago, expressed amazement at the saving this new device brings to the public," says Mr. Ogden. "The popularity of motion pictures in the home, admittedly one of the most popular forms of home entertainment, has been somewhat curtailed and made an exclusive pleasure for the man of means until the perfection of the Kodel *Homovie*. Where a man or woman desired to vacation, tour or take a general view of something of interest, it was necessary to buy from three to twelve rolls of film, costing $6.00 per roll. Today one roll of the *Homovie* takes as many pictures as four rolls of the former type of film. Manufacturers of film throughout the country have taken a keen interest in the development of this new camera and prophesy that the *Homovie* will do for motion pictures in the home what the Ford automobile did for people of moderate means. The films used in the Kodel *Homovie* are standard in every way, may be bought from any photographic dealer throughout the world, and are manufactured by several different companies.

"This new motion picture camera for the home" adds Mr. Ogden, "enjoys all the advantages of other types of motion pictures, color photography, reversible, negative or Panchromatic films, and can be loaded by a child in broad daylight. The camera is convenient to carry and is 8½ inches long, 3½ inches wide and 5 inches high. The operation is simple, with a view finder through which the operator looks at the scene he wishes to register, presses a button that releases a spring and automatically the horizontal and lateral motion begins, in perfect synchronization, taking sixteen pictures per second, operated by a spring motor constructed from Swedish clock spring steel."

The projector, made to project films taken by this new camera as well as the longer, more expensive type films taken by other types of cameras, contains a 250-watt projection bulb and concentrated filament, an accurately, specially ground 1⅛-inch silvered spherical mirror, carefully focused which reflects this intense light through a triple lens aspheric condenser, producing a powerful beam which, in turn, is reflected by means of a mirror through the film, objective lens and upon the screen. One of the remarkable features of this projector is that the operator may stop the projector at any time, leaving a huge still picture standing on the screen. A special heat absorbing glass shutter prevents film from breaking or blistering. The entire device, as well as the film, is fireproof.

"Motion pictures will form the backbone of our future records of events of family and home life," Ogden stated. "Our news reels and other types of pictures preserve the events of general world-wide appeal, but in the home there has been no opportunity to photograph family "news" because of the almost prohibitive price involved until the development of the *Homovie*. When the suggestion for a motion picture camera for the home, within reach of every purse, was made we deliberately planned to improve upon other types of motion picture cameras and projectors for the home until we could arrive at a product that was economical to operate. It has not been the initial cost of motion picture cameras and projectors that has kept home motion picture entertainment away from the public, but the upkeep in the expense of films," Ogden stated. "Now that we have reduced this cost seventy-five per cent, bringing it almost in the same range as films for still cameras, motion pictures will soon be as popular in the home as radio."



Here is the new projector

Make-up Problems

(Continued from Page 37)

blended into the chin than you use on the other parts of your face. In that manner your chin will appear more prominent by being of a lighter shade than your general complexion.

Dear Mr. Factor:—I have read about the wonderful evening Make-up worn by the various screen stars and social celebrities at the Previews. Will you tell me how to accomplish the same effect. I am a natural blonde—my parents are from Norway—with blue eyes and very white skin.

THELMA G.,
Fresno, Calif.

Answer:—A perfect blonde with your complexion should wear a flesh powder, Bright lip stick, Blondeen dry rouge, blue eye-shadow, and touch up the eyebrowns with a brown pencil and brown masque for coloring the lashes.

Dear Mr. Factor:—As a result of scalding water falling on my face when I was a baby, I have a livid scar on the left side of my face about the size of a half dollar. Isn't there some way that I can cover this so it won't be so noticeable? My make-up does help, but the scar is still evident.

HELEN S.,
Topeka, Kansas.

Answar:—If you will write to my Studio personally, I will be pleased to send you a sample of a speal preparation that is applied before make-up which will conceal your scar completely. Please state your complexion and whether your skin is dry or oily.

German studios worked 213,766 hours in January and 161,153 hours in February, 1929, as compared with 168,839 hours during the same period last year.

Zeiss Tessar

No camera can be better than its lens. All Carl Zeiss Tessars ensure perfect definition and brilliancy, even at full aperture, and results will not be impaired by flare. These are only a few reasons why Carl Zeiss Tessar Lenses have universal endorsement

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PROTECT YOUR IDEA!

Write Freely, sending Data of your Invention, for full advice.

Write for "Proof of Invention" folder mailed free.

TRADE-MARKS REGISTERED

We give genuine personal service.

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Mention American Cinematographer when writing.

Remote Control Used In Canada By Phonofilm

Installations being made in Montreal by the De Forest Phonofilm Canada, Ltd., are using the remote control volume system, whereby the sound in the houses is regulated from the auditorium. While the control system has no mechanical parts or motors used in its operation, it is claimed, it can be regulated to correct the tonal quality of each scene in a picture.

You Can "Double In"

Outdoor Shots on
Indoor Sound Stages

behind any intimate Dialogue shot
by using a

DUNNING PROCESS PLATE

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Fixing Baths

(Continued from Page 9)

6. *The Effect of Excessive Hardening*—Excessive hardening is apt to render the gelatin opalescent, especially if the temperature of the fixing bath is slightly above normal. The opalescence is usually removed during subsequent washing and drying and is ordinarily un-objectionable. If, however, the opalescence persists after washing, it may be removed by bathing the film in a dilute (1.0%) solution of sodium carbonate. This must be done at a relatively low temperature (not above 65°F.) because the carbonate solution destroys the hardening, permitting the gelatin to soften and swell, which may be followed by subsequent reticulation at higher temperatures.

It has also been considered that excessive hardening of the gelatin film increases the brittleness of motion picture positive film thus shortening its projection life. In order to check this, samples of positive and negative motion picture film were treated with an acid alum fixing bath so as to give melting points of 125°F. and 180°F., respectively. These films were stored for six months at 115°F. and at a relative humidity of 80%, and then stored for one year at 70°F. and 60% relative humidity. The films were tested for brittleness and the tendency of the emulsion to strip from the base at intervals during the keeping tests, and in no case was there any tendency of the emulsion to strip, while the films at no time were unduly brittle.

It is, therefore, considered that provided motion picture film is properly processed and thoroughly washed and stored under suitable conditions of temperature and humidity, moderate hardening with potassium alum does not materially impair the keeping properties of gelatin films.

7. *Factors Governing the Tendency of a Fixing Bath to Produce Blisters*—A large quantity of acid is desirable in a fixing bath because it permits the addition of a large quantity of developer before a sludge of aluminium sulfite commences to form. An excess of acid, however, may cause sulfurization, which in turn can be retarded by the addition of sulfite or a buffer salt such as sodium acetate[15], but the sulfite in turn lowers the developer capacity, whereas the acid was added to raise this capacity in the first place. The quantity of acid which can be added is likewise limited by the tendency of the bath to produce blisters on the films treated. The formation of blisters is largely due to the liberation of carbon dioxide or possibly sulfur dioxide formed by the action of the acid on the sulfite or carbonate contained in the film from the developer. The gases emitted in this manner form little gas bells in the gelatin which break when the pressure becomes sufficiently great, producing a crater-like appearance in the gelatin.

It was found that the tendency of a fixing bath to produce blisters is governed by the following factors:

a. The quantity of sulfite and carbonate contained in the film when immersed in the fixing bath, which in turn depends upon the sulfite and carbonate content of the developer, and the extent of the rinse, if any, between developing and fixing.

b. The rate of agitation of the film when first immersed in the fixing bath. Agitation removes the excess developer from the surface of the film and hastens its diffusion out of the gelatin, thus rapidly lowering the content of alkali. Agitation of the films several seconds after immersing in the fixing bath is one of the most effective means of preventing blisters.

c. The nature and thickness of the gelatine film. Films having a thick coating of gelatin under given conditions blister much more readily than thinly coated films.

d. The duration of the rinse or wash as commonly used between developing and fixing. The longer and more complete the wash with respect to the removal of the developer, the less is the tendency of the fixing bath to blister, because the substances which cause blistering have been either completely removed or their concentration so reduced that few or no gas bubbles are formed when immersed in the fixing bath.

e. The degree of swelling of the gelatin when first placed in the fixing bath which, in turn, depends upon the nature of the gelatin and temperature and composition of the developer, and the time of development.[16]

f. The acidity of the fixing bath. It was at first thought that the active acidity as represented by the hydrogen ion concentration measurements might be a measure of the tendency of a fixing bath to blister. The hydrogen ion concentration was determined for fixing baths containing widely varying quantities of sodium sulfite, acetic acid, and potassium alum, but in all cases the pH values were approximately constant, varying only from 4.5 to 4.7, although the tendency of the baths to produce blisters varied considerably. It is apparently not possible to correlate the hydrogen ion concentration figures with the propensity of a given bath to blister because a stable bath is sufficiently buffered to maintain a constant hydrogen ion concentration regardless of the concentration of acid used.

It was observed that the tendency of a bath to cause blisters increased as the total acidity was raised above the value at which blisters were found under average practical working conditions. The total acidity was determined by the quantity of a known alkali required to neutralize a given quantity of the fixing bath. Since the developer (MQ 25) represents a known alkali, and since it was used in all other cases in the testing of the properties of a fixing bath, it was also used to determine the total acidity of a fixing bath. The results are expressed in terms "the number of c.c. of MQ 25 developer required to neutralize 100 c.c. of fixing bath using phenolphthalein as indicator." It was considered that for practical purposes when a normal rinse is employed between developing and fixing and when the temperature does not exceed 70° to 75° F. the acidity of a fixing bath should not be greater than 150 c.c. For temperatures above 75° to 85°F. an acidity of 30 c.c. to 50 c.c. only is permissible.

8. *The Revival of the Hardening Properties of Fixing Baths*—Even the most suitable acid hardening fixing bath, compounded according to previous discussion, is rendered unsatisfactory for further use by the addition of developer long before the hypo is exhausted; that is, the various properties of the bath are so impaired that the fixing bath is rendered useless for further fixation because of (1) a decrease in the hardening properties; (2) the formation of a precipitate of aluminium sulfite; or (3) a sufficient decrease in acidity to permit discoloration of the bath, while the fixing power of the hypo still remains adequate for further use. It might be argued that the concentration of the hypo could be so cut down that the hypo and hardener should be exhaused at the same time, but to meet this condition the concentration of the hypo would need to be inefficiently low.

In order to determine the most suitable method of reviving the hardening properties it was necessary to determine first the products formed during exhaustion, and, secondly, the effect of these products on the properties of the fixing bath.

9. *Products of Exhaustion and Their Effect on the Hardening Properties of a Fixing Bath*—During exhaustion of a fixing bath the following products accumulate therein: developer and developer oxidation products, sodium silver thiosulfate, sodium bromide and sodium iodide, sodium acetate, sodium bisulfite, sodium sulfate, basic aluminium sulfites, and, occasionally, free sulfur.

The sodium acetate and sodium bisulfite are a result of interaction between the acetic acid and the sulfite and carbonate carried in by the developer, while some of the sodium bisulfite is converted to sodium sulfate by aerial oxidation. The sodium bromide and iodide are products of reaction from the fixation of bromo-iodide emulsions.

The addition of sodium acetate and sodium bisulfite to a fresh bath tends to increase the hardening produced and the sulfurization life of the bath. Sodium acetate does not affect the tendency of the bath to precipitate aluminium sulfite, while sodium bisulfite only slightly increases this tendency. Neutralization of the sodium carbonate by the acetic acid reduces the acidity of the bath, and by reference to the curves in Figs. 3, 4, and 5, it is seen that as the acidity is decreased the hardening increases up to the point at which aluminium sulfite precipitates.

It was also considered possible that the exhaustion of the bath by a given number of films might be accompanied by the absorption or removal of a given quantity of alum by virtue of the hardening imparted to the film, but this was shown to be negligible for all practical limits of exhaustion; that is, the quantity of alum removed by a given quantity of film was not sufficient to affect the hardening properties of the bath. This was determined by quantitative estimation of the alum content of a bath before and after exhaustion.

The other products of exhaustion: namely, silver mono- and di-sodium thiosulfate, developer oxidation products, and sodium and potassium bromide were found to have little or no effect on the hardening properties.

It is, therefore, apparent that the cause for the decrease in hardening and general usefulness of a hardening fixing bath when exhausted to the point at which aluminium sulfite precipitates is the unbalanced condition brought about by the neu-

(*Continued on Page 43*)

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Gold

(Continued from Page 16)

tralization of the excess acid by the carbonate of the developer carried into the fixing bath, and also by the added effect of the increased quantity of sulfite present. For all practical purposes, therefore, it would appear that the revival of a fixing bath Eastern college only to have him return to the rangeland and become a professional gambler.

With scornful deliberation he swung from his horse and sat down by the spring. "Let me drink, will you?" he asked derisively.

"Why are you alone?" Rip demanded.

Harder did not answer until he had taken several gulps of water. He looked up at Rip and laughed. "Got seperated from the posse! Come on, kid, shoot! Better stand close and point that thing right between my eyes."

That remark made Rip Rharon boil with rage. He wanted to shoot and get it over with. Then he would be free. Yet he did not want to add murder to his record. True, he had shot several men, but that was when defending the payrolls. What quirk of fate was making him kill now? Either tie Harder to a tree where he might die of thirst and hunger—or shoot him dead. Just one shot. He must! He couldn't let Harder go!

Standing with the rifle clenched in his hands, Rip nerved himself with that thought. Just one shot! Rip felt he would explode. It seemed an eternity that he stood thus, then James Harder sneered up at him.

"You're a coward, Rharon! You can't kill me, and you're an awful dumbell. Believe me, kid, if I started out to steal a couple of bags of gold, I'd make a good job of it!" His boastful remark turned into a jeer. "Come on, when does the shooting begin?"

Suddenly Rip's eyes widened, then narrowed to mere slits. The Indian in him was again coming to the fore. He saw it all now: the money in former payroll shipments had always been in bills, with the serial numbers copied to give a working clue in case of robbery. But this one time the Tonto City Bank had been short on paper, so the cashier made up the payroll in gold pieces. No one save the cashier and himself had known that—yet Harder knew it was gold!

"You damned robber!" Rip screamed; dropped his rifle, and with one leap was all over Harder.

"You crook!" Rip snarled again, and fought with diabolical fury. "Give me my two thousand dollars!"

The college trained athletic prowess of James Harder did not avail against the furious onslaught of the young cowboy. It was like pitting a well-trained bulldog with a wild cat. One minute after the fight started, Harder was stretched out cold.

Rharon, the savageness in his body having been spent, left his enemy and went to Harder's horse. After fumbling with the saddlebags, he drew forth the two sacks of gold pieces. There was no need to count them. They were all there. The bank's seal was still unbroken.

Back by the prone form near the water hole, Rharon paused, then suddenly stopped and splashed water on Harder's face. After a moment his eyes opened slightly; he started to speak, but sputtered over his battered teeth. Then:

"A-ll r-r-ight, you w-ild Geronimo, you win!" acknowledged Harder. "I found your saddlebags lying in the trail, examined them, and found that it was gold. Then I met the posse that was after you, but I figured it would be a good chance to pay off some old gambling debts that I had, without father knowing about them. So, I kept on going with the money. Now, damn you, what are you going to do about it?"

For a moment Rip Rharon stood silent, looking down at Harder, who now had risen to a sitting posture.

"You can go to hell, so far as I care," replied Rharon, after some thought. "I'm taking the money back to the ranch where it belongs!"

New Portable Projector

A NEW type of portable talking picture equipment designed to "bring audible and visual education to a point of easy and practical usage" was demonstrated recently by RCA Photophone.

The portable equipment can be set up in about 15 minutes, it is stated, the suitcase-size projector, small screen and folding horn of a size to fit with ease into an automobile. The trunk is about as large as a wardrobe trunk when folded. The projector weighs under 100 pounds, it is stated. Volume and clarity of tone are claimed as features of the equipment.

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Fixing Baths

(Continued from Page 41)

should be accomplished by the addition of a given quantity of acid at certain intervals.

*If the bath does not precipitate a sludge of aluminium sulfite in 2 days at 115°F., it will not sludge at room temperature within a period of one to two weeks and is, therefore, satisfactory.

(To be Continued)

Amateur Movie Making

(Continued from Page 27)

tempo, as M. Eisenstein demonstrated in "Potemkin." If, on the other hand, the tempo desired is a slow, peaceful one, the scenes should be run to their maximum footage, with as little intercutting as possible. There is also one very important canon to be observed in all cutting and intercutting: a photographically dark scene should never be placed next to a light one, except in the rare cases when the contrast is deliberately planned to heighten some dramatic effect, as, for example, a cut from a scene showing the hero's squalid surroundings in the slums, to the heroine's boudoir on Park Avenue. In this case the contrast between the low-key photography of the first scene and the high-key photography of the second heightens the emotional contrast of the two settings. Incidentally, if it were desired to establish the fact that the poor hero was in a happier *milieu* than the wealthy heroine, the photographic contrasts could be reversed, and be equally powerful aids to the action in building up the emotional response desired.

Another vital point is the closeup. Although this device has too often been run to death in professional films—due largely to the supposed necessity of keeping stars' faces before the public—it has not as a rule been employed sufficiently by amateurs. Properly used, the closeup is the most economical and powerful story-telling expedient in pictures. It is an excellent practice to take closeups to match every long-shot, wherever possible. Then, after the long-shots of the film have been completely assembled, the picture can be studied on the screen, and the exact places to insert the closeups determined. Never try to insert closeups before this study: it cannot be done satisfactorily.

New Films for Old

All of this applies quite as well to old films as to new ones, for re-editing is often able to give a surprising newness to films which are so familiar as to seem tiresome. This is also true of the commercial library films one may own, though, as most of these have been edited by experts, one should guard against over-refining them in the re-editing.

Another aid in either editing or re-editing is the possession of a good assortment of 'stock shots.' All the studios maintain such stock libraries, and in addition often find it necessary to purchase additional material from the several commercial stock libraries in existence. Therefore, in cutting the amateur picture, no scenes of even passable photographic quality should be thrown away; instead they should be carefully saved, and catalogued for future reference. Furthermore, the amateur should at all times be on the lookout for scenes of interest to add to that library. Very often he will come upon some unexpected bit of action while filming something else: don't be afraid to use a few feet of film on such bits, for there is no telling how useful they may be in the future. The same applies to even the most ordinary scenes encountered while travelling, which can, with the aid of a little ingenious editing, give the impression that the whole action of a picture was photographed around the location of the 'stock shot,' instead of at home, as it actually was. The studios make use of this expedient in many of their films which, though actually photographed in Hollywood, may seem by the aid of ingeniously-intercut stock scenes, to have been made abroad. Of recent films, of course "The Four Feathers" is the most outstanding example of this, for while none of the principals so much as ventured outside the gates of the Hollywood studio, the scenes which were actually photographed in the Soudan were so cleverly cut into the picture that the audience was cajoled into believing the whole thing occurred there. Careful study of this and other similar pictures will soon show the immense value of such individual libraries of stock scenes for amateur use, as well as for professional.

Color

Still another point to be considered is the application of color. Nothing else can add more charm and newness than the judicious use of the various methods of coloring monochrome pictures, which invariably seem to breathe new life into even the most ordinary films. While as yet the amateur does not have the same variety of tinted film-stocks available that the professional has, he can obtain an assortment of sufficient range to open up new vistas before him. In the positive film there are some half-a-dozen colors to choose from, as the different manufacturers coat their positive emulsions on a variety of tinted bases. Furthermore, a number of the larger laboratories about the country are equipped to *tone* amateur films as well. *Toning*, it may be wise to recall, is the process of coloring the emulsion, but leaving the highlights clear, while *tinting* is just the reverse, coloring the film-base itself, giving an image in black against a colored ground, and is usually done by coating the emulsion directly onto colored celluloid. The tints commercially available are straw, amber, blue, green, flame, and violet; needless to say, they are only available on positive stock. However, the various color-disc arrangements available for projectors enable nearly the same results to be had with reversal film. The only tones most laboratories furnish in the small quantities needed by amateurs are blue and sepia. Used either singly or combined, these various colors give monochrome films a warmth and life impossible of description. One can hardly more than suggest a few of the possible uses of these tones and tints, but among them may be mentioned sepia, for hunting scenes; blue *tones* for snow-scenes, clouds, and some marines; blue *tints* for marines where water and sky predominate, and are rendered light; the same blue tint for night-scenes; amber, for artificially-lighted interiors, and scenes in which the warm, golden glow of sunlight figures strongly; green, for landscapes; flame-color for fire scenes, and those lit by flares and campfires—especially the latter, which it renders particularly realistic. Combinations of tones and tints go even farther to make a film seem lifelike. For instance, scenes taken in the woods—like the many hunting scenes that will be filmed this fall—are made surpassingly lifelike by the use of a sepia tone on a green-tinted film-stock, while marine sunsets gain a new beauty when shone in a blue-toned image on either flame or pink tinted stock. One could extend such a list as this almost indefinitely, for the possible tone-and-tint combinations are innumerable, and their uses bounded only by the creative ingenuity of the individual. However, as space does not permit it here, let me refer those who are interested, and who enjoy doing their own laboratory work, to the excellent little booklet on the subject published by the Eastman Company, and to the similar articles which are being prepared for the forthcoming "Cinematographic Annual."

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Keeping Films Clean

Aside from editing and coloring, there is another operation which should frequently be performed on all films: this is cleaning. Even under the best conditions, dust, grease, and dirt eventually gather on movie films, and, unless removed, can and will speedily ruin them. There are a number of excellent film-cleaning solutions on the market, almost any one of which, properly used, will add years to the film's life. Carbon tetrachloride is also said to be an excellent cleaning solvent. If films are properly cleaned once or twice a year, not only will their effective lives be appreciably extended, but their brilliance on the screen, as well. This is of special importance with Kodacolor films, which become dimmed and unsatisfactory if only slightly dirty. Since the process of cleaning is simple, and so enormously worth-while, no amateur should overlook it. After all, our pictures are judged by their appearance on the screen, and since that is so dependent upon their good condition, no one should begrudge the time spent in cleaning them, nor the thought, time, and money expended in properly editing, toning, and tinting them.

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New Model Sound Truck Eliminates Batteries

THE latest improvement in portable sound-recording equipment is the substitution of a motor-driven generator for the batteries as a source of power for the recording apparatus. Upon the recommendation of Elmer R. Raguse, chief recording engineer for the Radio Victor Corp., the Electrical Research Products, Inc., have fitted one of their standard 3½-ton portable sound trucks with a gasoline-driven D.C. generator and a 220-volt, 3-phase A.C. generator and distributor in place of the usual batteries. The change not only increases the effective working time of the outfit, but also eliminates a great deal of bulk and weight, and insures cheaper operation.

The first of these new-model trucks to reach the Pacific Coast has for some time been in use by the Hal Roach Studio, whose recording is done by the Victor experts under Mr. Raguse. So successfully has the apparatus performed under service conditions that the manufacturers have decided to do away with batteries in all portable recording equipment used by licensees of the Western Electric process.

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J. I. Crabtree, new President of the S. M. P. E.

Crabtree Elected

Crabtree Elected Head of Motion Picture Engineers

J. I. Crabtree, of the Research Laboratories of the Eastman Kodak Company, was elected president of the S. M. P. E. at the Fall Convention, held in Toronto last month.

Mr. Crabtree was born in England on March 27, 1891, and received the degrees of both Bachelor and Master of Science from Victoria University at Manchester. He entered the Eastman Research Laboratories in 1913, where he is now in charge of the departments of Photographic Chemistry and Motion Picture Film Developing.

Mr. Crabtree has contributed many valuable papers to scientific photographic literature, and is a recognized authority throughout the world. Many of his papers have been reprinted as handbooks and are in use generally.

Mr. Crabtree has held the following positions in the Society of Motion Picture Engineers:

Chairman Papers Committee, 1925-28; Chairman Publications Committee, 1926-29; Chairman Progress Committee, 1928-29; Member Board of Governors, 1927-29.

Camera Aperatures

(Continued from Page 7)

ture for projection of sound-on-film talking motion pictures:

BE IT RESOLVED: that as a temporary measure this committee recommends that all studios and cinematographers using sound-on-film methods make marks on the camera ground glass equally spaced from the top and bottom in addition to the mat or mark for the sound track; these marks to delineate a rectangle 0.620 by 0.835 inches in size and that all vital portions of the picture be composed within these limits.

BE IT ALSO RESOLVED: That the committee further recommends that theatres which make a practice of re-establishing the full screen proportions from sound-on-film pictures do so by the use of an aparture whose size would be 0.600 by 0.800 inches on the basis of projection on the level, the horizontal centre of the aperture coinciding with the horizontal centre of the S. M. P. E. Standard Aperture.

Copies of this resolution have been sent to executives of all motion picture studios and leading theatre chains. The following studios have already reported that markings would be made on the ground glass of all cameras in accordance with the specifications contained in the resolution: Paramount-Famous-Lasky, Metro-Goldwyn-Mayer, United Artists, Pathe, Universal, R-K-O, Tiffany-Stahl, Mack Sennett. Darmour, and Educational. Present markings on Fox studio cameras approximate the recommended practice. This assures a uniform practice in the studios that anticipates and is in accord with existing practices in the theatres. The aperture dimension recommended to theatres represents a mean of dimensions reported by theatres now using the smaller aperture and may serve as a guide to theatres which may choose to adopt it in the future.

Professional Amateurs

(Continued from Page 35)

held it in my hands, and swayed against the movement of the boat. Finally, I held it, sighted it on the horizon, and rocked back and forth, keeping the horizon level. After I got home, I compared the three takes. The first one was far and away the best. The action in the foreground was clear, while the way the sea jumped around in the background gave just the right effect. It darn near made me seasick to watch it; it got the impression over perfectly. Well, after this, I won't need any of your "seagoing" gyro tripods for ship scenes, even if they're made in the studio tank! That one little experiment with my amateur camera helped me a lot, professionally, and probably saved the studio several thousand dollars worth of equipment. Do you wonder that I'm all for studio folks being cine-amateurs?"

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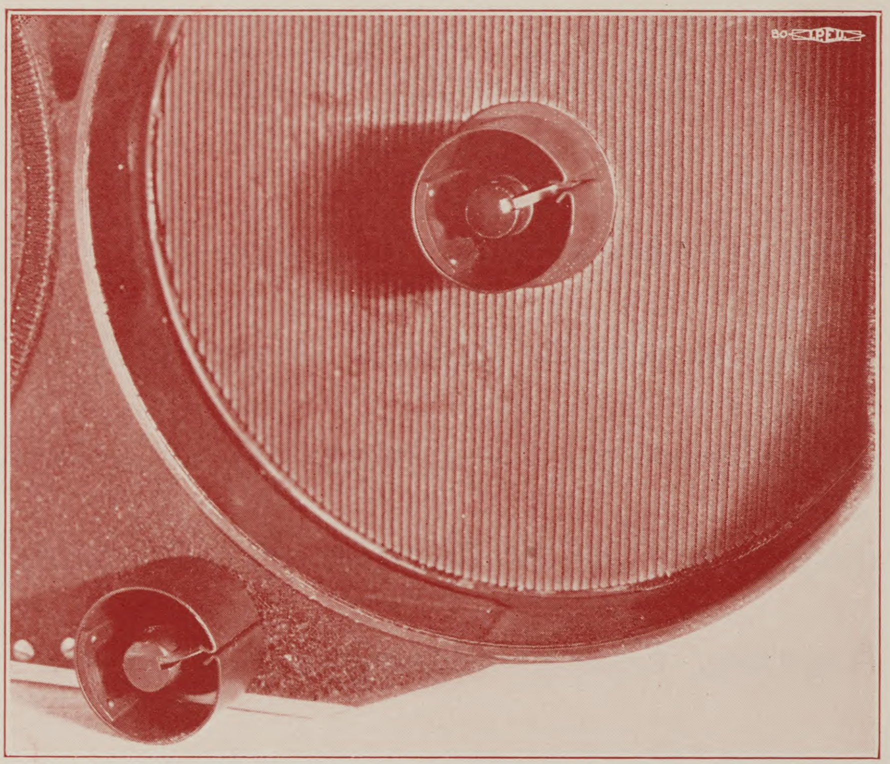

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